

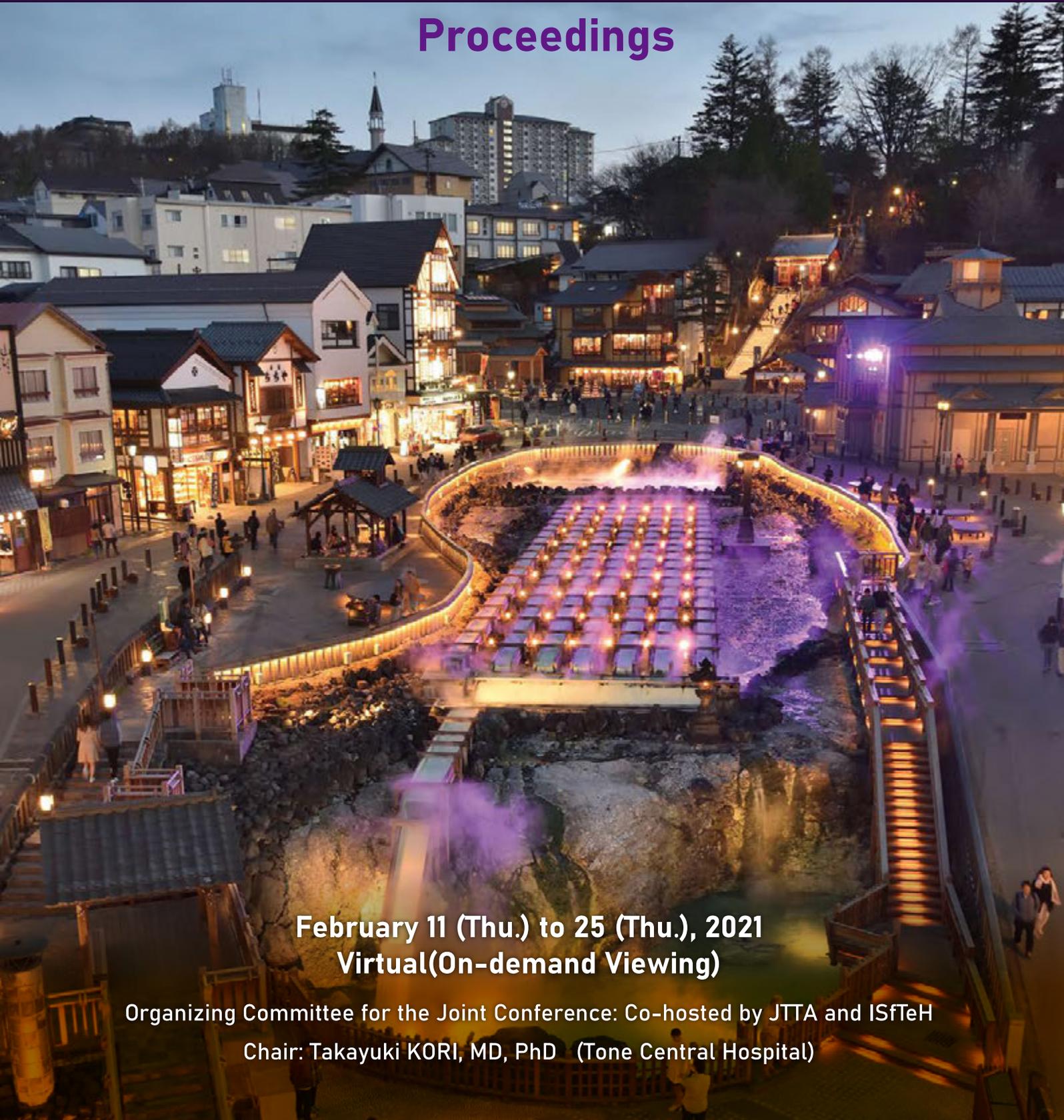
JTTA



ISfTeH

**The 25th ISfTeH International Conference in JAPAN
第24回日本遠隔医療学会学術大会 JTTA 2020 TAKASAKI
JTTA Spring Conference 2021**

Proceedings



**February 11 (Thu.) to 25 (Thu.), 2021
Virtual(On-demand Viewing)**

**Organizing Committee for the Joint Conference: Co-hosted by JTTA and ISfTeH
Chair: Takayuki KORI, MD, PhD (Tone Central Hospital)**

Armenia



Belgium



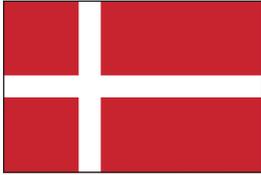
Brazil



Canada



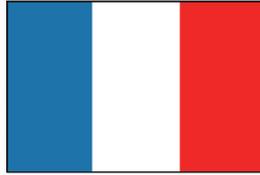
Danmark



Finland



France



Germany



Ghana



India



Italy



Mexico



Nederland



Philippine



Poland



Republic of Korea



Romania



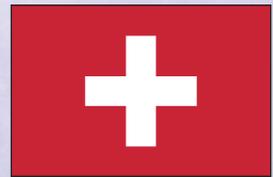
Russian



Slovenia



Switzerland



Taiwan



Ukraine



United Kingdom



USA



Japan



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第 24 回日本遠隔医療学会 JTТА 2020 TAKASAKI

JPL 会長講演	
JEL 特別教育講演	
JSY 大会企画シンポジウム	
WS 企画ワークショップ	
JSI 分科会	
JGO 一般演題 口演	
JGP 一般演題 ポスター	
JSL 共催セミナー	

JTТА Spring Conference 2021

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Welcome address



We are pleased to announce that the 25th ISfTeH International Conference and the 24th Annual Conference of JTTA and the JTTA Spring Conference 2021 will be held on the web for 14 days from February 11 (Thu) to 25 (Thu), 2021. On behalf of the conference organizing committee, I am honored to invite you to this conference.

Originally, the conference was scheduled to be held face-to-face in the year of the Tokyo Olympics, but due to the global COVID-19 pandemic, it was postponed to the following year and redesigned to incorporate a new life style realizes the theme of the conference, "Connecting People with Telemedicine".

While the world is now locked out of transportation and face-to-face communication, the conference will be completely online in style, eliminating the risk of infection and the problems of travel and time differences, allowing participants to attend the conference in their free time.

In addition, all presentations were prerecorded because of the risk that presenters and chairpersons would not be able to participate in real-time online presentations. You can always have questions and discussions on the website. In this way, the conference will be held safety and two-way communication will be maintained.

The conference will be divided into two parts: The International Conference (in English) and the Domestic Conference (in Japanese). 33 presentations were submitted for the International Conference, and 106 presentations were submitted for the Domestic Conference. There will also be expert educational lectures, symposia on innovative topics, and medical education workshops. The symposium will have a total of 51 speakers in 7 international sessions and 4 domestic sessions. We hope you will take the time to listen to them during the two weeks.

With the pandemic of COVID-19, the world's telemedicine has taken a major step forward. However, COVID-19 continues to threaten us, and there are still many people in the world who are unable to take advantage of telemedicine.

We invite you to share your experiences with COVID-19 and its application with the rest of the world at this conference. Let us overcome the COVID-19 pandemic in 2021 with a connection that transcends time and space, combining the wisdom of humanity!

We will do our best to make this conference memorable for all participants, and we look forward to seeing you on the web conference!

Takayuki Kori, MD, PhD
Chair of the 25th ISfTeH international conference

Welcome message from the President of the ISfTeH Connecting People With Telemedicine



It is appropriate that we will hold the 25th edition of the ISfTeH International Conference, jointly with the 24th JJTA Annual Academic Conference, in Japan. The ISfTeH was born in Kobe, Japan at the Third International Conference on the Medical Aspects of Telemedicine in May 1997. Since the founding of the Society, we have achieved a great deal in the field of digital health. Today, digitalization is enhancing the range of services available in telemedicine around the globe. However, there still remain challenges to be tackled, even as we explore more opportunities that come along with digitalization in healthcare. With these words, I would like to warmly welcome you to the 25th ISfTeH International Conference and the 24th JJTA Annual Academic Conference, which will take place virtually due to the global spread of COVID-19.

At the moment, we can observe many innovative and promising developments in our field: researchers and organizations are developing AI-driven technologies for healthcare professionals and consumers. Automation through AI technologies holds the potential for increasing clinical and administrative capacity, increase time and process efficiency and eventually for improving treatment quality as a whole.

It goes without saying that technological advancements need to meet one vital condition: they should not take the patient further away from medical professionals. Instead, technological advancements ought to create greater closeness and connect doctors with patients. As the field continues to evolve and expand at a fast pace, it will become an even greater challenge to convey and maintain, if not increase, people's trust in digital health solutions. Moreover, we need to bear in mind that such powerful innovations need to be handled thoughtfully.

I am convinced that the upcoming joint conference with its exciting program will help us to further address the opportunities and challenges of this new era of digitalization in healthcare. I wish all of you successful, productive and fascinating virtually conferences.

Dr. Andy Fischer, MD
President ISfTeH

Dear Colleagues,



Welcome to the 24th Annual Conference of the Japanese Telemedicine and Telecare Association (JTTA), the 25th ISfTeH International Conference, and JTTA Spring Conference 2021.

JTTA was established in April 2005 and has been working as an academic society to promote telemedicine in Japan. Initially, topics such as Telepathology, Teleradiology, Telemonitoring, and homecare support system were discussed. After the Great East Japan Earthquake in 2011, disaster medical support, medical cooperation systems were focused. Communication Robots and Robots for rehabilitation and care support were also focused. Since 2018, online medical clinics covered by National Health Insurance were the main topics. Recently, it also covers digital therapeutics.

This conference was scheduled to be held in Takasaki, Japan last October, but due to the pandemic of COVID-19, it was postponed to this February and will be held on the web. It is a pity that you will not be able to come to Japan in the beautiful autumn, but with the pandemic of COVID-19, telemedicine will be used all over the world and many new findings will be obtained. I think that many results will be reported this time as well. We hope that you will gain a lot of knowledge at this conference, have discussions, and bring it home.

I was elected as an international board member of ISfTeH in last year and wish to be a bridge between JTTA and ISfTeH. I will do my best so that both members can exchange information with each other. The conference organizing committee and the supporters will do their best to manage this web convention. I look forward to seeing all of you at the web conference.

Hiroshi Kondoh, MD, PhD
President of Japanese Telemedicine and Telecare Association
Chairman and Professor
Division of Medical Informatics, Tottori University Hospital

Greetings



It is my great pleasure to declare open the “25th ISfTeH International Conference in JAPAN” and the “24th JTTA Annual Academic Conference in Takasaki.”

I would also like to take a moment to express my sincere appreciation to all the healthcare professionals working tirelessly on the front lines as COVID-19 continues to spread throughout the world.

To return to our main topic, the world is looking to information and telecommunications technology to facilitate and adapt communication needs in the midst of COVID-19. Holding this conference online is an example of just such an adaptation, and I believe that the promotion of telemedicine is exactly what is needed in this changing society.

As the population of Japan continues to rapidly increase in age and shrink in number, it is critical to respond to the corresponding increase in medical demand and decrease of medical staff. Telemedicine allows for the efficient use of scarce medical resources, and in this regard, its development and implementation are even more worth pursuing.

In Gunma Prefecture, we are promoting digital transformation with the goal of realizing a society where no one is left behind, and we believe that telemedicine is an indispensable element of such a world.

The theme of this year’s conference is: “Connecting People with Telemedicine.” I hope you will find these presentations helpful and enlightening, and that they will lead to new solutions for current issues in medicine.

Incidentally, this conference was originally planned to be held at G Messe Gunma, which opened in June last year, but the decision was made to switch to an online format in light of the continued spread of COVID-19 worldwide.

After the pandemic has ended, I hope that you will take the opportunity to visit Gunma Prefecture. Gunma’s rich natural landscape ranges from majestic mountains to sweeping plains, and we are famous for having over 100 traditional Japanese onsens or hot springs. Moreover, Gunma is a treasure trove of foods, with many varieties of vegetables grown at different altitudes, beef made from cattle raised in beautiful natural surroundings, and sake made from pure, clear natural water and high-quality rice.

May this conference be fruitful for all in attendance and contribute to your future endeavors.

Ichita Yamamoto
Gunma Prefecture Governor

Organization

The chair of the joint conference

Takayuki Kori, MD, PhD Tone Central Hospital

The Vice chair of the joint conference

Yuichiro Saito Gunma University Hospital

Organizing Committee

Ikuo Tofukuji Takasaki University of Health and Welfare

Hiroki Matsumoto Maebashi Institute of Technology

Taishiro Kishimoto Keio University School of Medicine

Ryoji Suzuki Takasaki University of Health and Welfare

Hiroaki Kato Kyoto Prefectural University of Medicine

Frank Lievens ISfTeH

Heihachi Kurematsu BHN Association

Shotaro Kinoshita Keio University School of Medicine

Kelly Cortright Keio University School of Medicine

Yukio Ohno Lead Co., Ltd.

Makoto Miyata Restaurant Sunflower

Yasuhiro Takeuchi Gunma Congress Support

Presidential Lecture

IPL	
Chair	Hiroyuki Morita
IPL-1	Andy Fischer
IPL-2	Hiroshi Kondoh
IPL-3	Takayuki Kori

Joint Invited Lecture

<p>IJL1</p> <p>Chair Yuichiro Saito IJL1-1 Georgi Chaltikyan IJL1-2 Haruo Kuroki IJL1-3 Taishiro Kishimoto</p>	<p>IJL2</p> <p>Chair Akimune Fukushima IJL2-1 Jennifer L. Fang IJL2-2 Kazuhiro Hara</p>	<p>IJL3</p> <p>Chair Vimal Wakhlu IJL3-1 Jarmo Reponen IJL3-2 Ichiro Mori</p>
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International Symposium

<p>ISY1</p> <p>Application of new technology to telemedicine</p> <p>Chair Hiroki Matsumoto Chair Tomomi Ogawa ISY1-1 Thomas Foley ISY1-2 Vimal Wakhlu ISY1-3 Akinori Moriichi ISY1-4 Naoki Kobayashi ISY1-5 Yuji Aburakawa</p>	<p>ISY2</p> <p>How have telepsychiatry practices around the world changed due to the COVID-19 pandemic?</p> <p>Chair Taishiro Kishimoto ISY2-1 Taishiro Kishimoto ISY2-2 Allison Crawford ISY2-3 Daniel Guinart ISY2-4 Prakhar D. Jain ISY2-5 Marco Solmi</p>	<p>ISY3</p> <p>Health support challenges through telenursing</p> <p>Chair Tomoko Kamei Chair Birthe Dinesen ISY3-1 Birthe Dinesen ISY3-2 Michiko Moriyama ISY3-3 Yoko Shimpuk ISY3-4 Tomoko Kamei ISY3-5 Claudia Bartz</p>	<p>ISY4</p> <p>The current use and the prospect of location flexible clinical trials</p> <p>Chair Masahiro Okura ISY4-1 Jörn Watzke ISY4-2 Jackie Kent ISY4-3 Atsushi Kitamura ISY4-4 Angeli Dogra and Frederique Goulart</p>
<p>ISY5</p> <p>The impact of COVID-19 on medical education and communications</p> <p>Chair Tomohiko Moriyama ISY5-1 Lu-Cheng Kuo ISY5-2 Vittoria Vanessa Velasquez ISY5-3 Miguel A. Tanimoto ISY5-4 Luiz Ary Messina ISY5-5 Kuriko Kudo</p>	<p>ISY6</p> <p>Application of telemedicine to support tobacco cessation</p> <p>Chair Ikuo Tofukuji ISY6-1 Ikuo Tofukuji ISY6-2 Sean G. Kang ISY6-3 Ravi S. Nunna ISY6-4 Kohta Satake</p>	<p>ISY7</p> <p>Updates in tele-cardiology</p> <p>Chair Alexandru Mischie Chair Dan Gaita ISY7-1 Stefano Omboni ISY7-2 Daryna Chernikova ISY7-3 Mihai Trofenciu</p>	

General Session (Oral · Poster)

<p>IGO1-1 ~ IGO1-5 (Oral)</p> <p>Telemedicine in the age of COVID-19 Chair Shuji Shimizu</p>	<p>IGO2-1 ~ IGO2-4 (Oral)</p> <p>Developments in telemedicine in Japan Chair Satoshi Ishiko</p>	<p>IGO3-1 ~ IGO3-3 (Oral)</p> <p>Application of telemedicine in clinical practice Chair Shingo Kasahara</p>
<p>IGO4-1 ~ IGO4-7 (Oral)</p> <p>Considerations for the administration and use of telemedicine Chair Piotr Skarzynski</p>	<p>IGO5-1 ~ IGO5-4 (Oral)</p> <p>Using telemedicine for educational purposes Chair Pirkko Kouri</p>	<p>IGP-1 ~ IGP-9 (Poster)</p> <p>Poster presentations Chair Ryoji Suzuki</p>

Sponsored Lecture

ISL	
ISL1	co-sponsored by Sumitomo Dainippon Pharma
ISL2	co-sponsored by PHC Corporation
ISL3	co-sponsored by CureApp, Inc.
ISL4	co-sponsored by Melody International Ltd
ISL5	co-sponsored by Carecom Co., Ltd.

会長講演

JPL	
座長	森田 浩之
JPL	郡 隆之

特別教育講演

JEL	
オンライン診療の適切な使い方と可能性	
座長	大橋 博樹
JEL	武藤 真祐

大会企画シンポジウム

<p>JSY1</p> <p>最新技術</p> <p>座長 坂田 信裕 座長 松本 浩樹 JSY1-1 坂田 信裕 JSY1-2 小林 直樹 JSY1-3 沖 英次 JSY1-4 安江 輝</p>	<p>JSY2</p> <p>新しい無線通信方式 5G が遠隔医療にもたらすもの</p> <p>座長 松本 浩樹 座長 本間 聡起 JSY2-1 本間 聡起 JSY2-2 愛澤 史佳 JSY2-3 中村 光伸 JSY2-4 奥村 幸彦 JSY2-5 大野 誠司</p>	<p>JSY3</p> <p>大災害を迎え撃つ遠隔医療の挑戦</p> <p>座長 大山 太 座長 中村 光伸 JSY3-1 久保 達彦 JSY3-2 杉田 学 JSY3-3 黒川 貴幸 JSY3-4 近藤 祐史 JSY3-5 井原 則之 JSY3-6 小笠原敏浩 JSY3-7 大鶴 卓 JSY3-8 大山 太</p>	<p>JSY4</p> <p>COVID-19 第 1 波到来事の遠隔医療の活用と第 2 波への備え</p> <p>座長 黒木 春郎 座長 郡 隆之 JSY4-1 近藤 敬太 JSY4-2 織田 良正 JSY4-3 田中 志子 JSY4-4 上家 和子</p>
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企画ワークショップ

WS			
遠隔医療の普及と教育・ディスカッション			
座長 真原 仁	WS-1 木村 慶彦	WS-4 松原 好孝	WS-7 外川 和子
座長 松原 好孝	WS-2 高丸 慶	WS-5 松原 好孝	WS-8 岡田 宏基
	WS-3 赤松 諒一	WS-6 真原 仁	WS-9 阿久津靖子

分科会

<p>JSI1 国際医療分科会 市民に遠隔医療をやさしく学んでもらう分科会</p> <p>座長 瀧澤 清美 座長 大木 里美 パネリスト 酒巻 哲夫 パネリスト 江口 幸仁 JSI1-1 大木 里美 JSI1-2 西村由希子 JSI1-3 内田 陽子</p>	<p>JSI2 周産期医療分科会 周産期オンライン診療への展望—遠隔モニタリング—</p> <p>座長 小笠原敏浩 座長 鈴木 真 JSI2-1 小笠原敏浩 JSI2-2 小田切幸平 JSI2-3 末光 徳匡 JSI2-4 清水 正樹</p>	<p>JSI3 睡眠遠隔医療分科会 ウイズコロナ時代の睡眠遠隔医療</p> <p>座長 吉嶺 裕之 座長 千葉伸太郎 JSI3-1 陳 和夫 JSI3-2 富田 康弘 JSI3-3 後平 泰信 JSI3-4 吉嶺 裕之</p>	<p>JSI4 精神科遠隔医療分科会 COVID-19 に伴う精神科遠隔医療の普及と課題</p> <p>座長 岸本泰士郎 JSI4-1 船山 道隆 JSI4-2 大鶴 卓 JSI4-3 木下翔太郎 JSI4-4 岸本泰士郎</p>
<p>JSI5 歯科遠隔医療分科会 歯科遠隔医療の現状と課題</p> <p>座長 長縄 拓哉 JSI5-1 長縄 拓哉 JSI5-2 高丸 慶 JSI5-3 竹山 旭</p>	<p>JSI6 デジタル療法分科会</p> <p>座長 佐竹 晃太 JSI6-1 市川 太祐 JSI6-2 古川 壽亮 JSI6-3 佐藤 雅哉</p>	<p>JSI7 循環器における在宅医療分科会 在宅医療におけるエコーの必要性</p> <p>座長 萱橋 理宏 座長 笠原 真悟 JSI7-1 長谷川高志 JSI7-2 笠原 真悟 JSI7-3 掃本 誠治 JSI7-4 久保山 修</p>	<p>JSI8 遠隔 ICU 分科会 遠隔 ICU が創造する未来の医療とは</p> <p>座長 高木 俊介 パネリスト 新井 悠介 JSI8-1 藤井 裕城 JSI8-2 鈴木 太郎 JSI8-3 南部 雄磨</p>
<p>JSI9 オンライン診療分科会 COVID-19 とオンライン診療</p> <p>座長 武藤 真祐 JSI9-1 黒木 春郎</p>	<p>JSI10 遠隔医療法務分科会 オンライン診療に関する予防法務セミナー</p> <p>座長 伊藤 寛之 座長 東福寺幾夫 JSI10-1 伊藤 寛之 JSI10-2 鈴木 孝昭 JSI10-3 青木 聡史</p>	<p>JSI11 オンライン服薬指導分科会 オンライン服薬指導の夜明け</p> <p>座長 狭間 研至 座長 鈴木 亮二 JSI11-1 狭間 研至 JSI11-2 木村 慶彦 JSI11-3 原 敦子 JSI11-4 鈴木 亮二</p>	

一般演題（口演・ポスター）

JG01-1 ~ JG01-3 (口演) テレナーシング 座長 亀井 智子	JG02-1 ~ JG02-5 (口演) 遠隔医療の現状と将来 座長 大林 克巳	JG03-1 ~ JG03-4 (口演) 教育・リハビリテーション 座長 岡田 宏基
JG04-1 ~ JG04-4 (口演) モニタリング・最新技術 座長 本多 正幸	JG05-1 ~ JG05-5 (口演) オンライン診療 座長 松本 武浩	JG06-1 ~ JG06-5 (口演) COVID-19 関連 1 座長 瀧澤 清美
JG07-1 ~ JG07-4 (口演) COVID-19 関連 2 座長 廣川 博之	JG08-1 ~ JG08-5 (口演) 実臨床 座長 太田 隆正	JG09-1 ~ JG09-7 (口演) 教育・技術・政策 座長 樽松 八平
JGP1-1 ~ JGP1-5 (ポスター) オンライン診療 座長 武藤 真祐	JGP2-1 ~ JGP2-4 (ポスター) オンライン服薬指導 座長 吉田 晃敏	JGP3-1 ~ JGP3-4 (ポスター) 先端技術・教育 座長 山田 桃子

共催セミナー

ISL	
JSL1 共催：PHC 株式会社	JSL5 共催：株式会社ケアコム
JSL2 共催：リード株式会社	JSL6 共催：イーサイトヘルスケア株式会社
JSL3 共催：富士フイルムメディカル株式会社	JSL7 共催：株式会社 CureApp
JSL4 共催：株式会社リコー	JSL8 共催：大日本住友製薬株式会社

Program

JTTA Spring Conference 2021

スプリングカンファレンス 2021

SC	
ワークショップ 1	データ利活用が創造する未来の集中治療とは
ワークショップ 2	へき地医療の推進に向けたオンライン診療体制の構築にむけて
ワークショップ 3	大動脈救急医療における医療施設間連携と遠隔医療
ワークショップ 4	オンライン診療時代のサイバーセキュリティ、ヘルスケア ISAC の試み
ワークショップ 5	ニコチン依存症治療用アプリの薬事承認・保険収載への道
ワークショップ 6	医療機関におけるリハビリ等を始めとする閉鎖空間におけるクラスター
ワークショップ 7	総務省の遠隔医療推進への取り組み
ワークショップ 8	経済産業省のヘルスケア ICT への取り組み
ワークショップ 9	遠隔診療を用いた周産期予後改善の取り組み；宮崎県の場合
ワークショップ 10	コロナ禍におけるオンライン診療の緊急アンケート ― 難病患者と現状を語る―
ワークショップ 11	診療報酬の動向

**The 25th ISfTeH
International Conference
in JAPAN**

Presidential Lecture

Chair **Hiroyuki Morita** Department of General Internal Medicine, Gifu University Graduate School of Medicine

IPL-1 **Connecting people with telemedicine- Impact of COVID-19 pandemic on the digital health market**

Andy Fischer

President ISfTeH

4

IPL-2 **Telemedicine and telecare are opening the medical digital transformation in Japan**

Hiroshi Kondoh

President of JTTA

5

IPL-3 **Connecting people with telemedicine**

Takayuki Kori

Chair of the 25th ISfTeH International Conference Department of Surgery, Tone Central Hospital

6

Connecting people with telemedicine - Impact of COVID-19 pandemic on the digital health market

Dr. Andy Fischer, MD

President ISfTeH

We can observe many innovative and promising developments in the digital health technology: researchers and organizations are developing AI-driven technologies for healthcare professionals and consumers. Automation through AI technologies holds the potential for increasing clinical and administrative capacity, increase time and process efficiency and eventually for improving treatment quality as a whole.

It goes without saying that technological advancements need to meet one vital condition: they should not take the patient further away from medical professionals. Instead, technological advancements ought to create greater closeness and connect doctors with patients. As the field continues to evolve and expand at a fast pace, it will become an even greater challenge to convey and maintain, if not increase, people's trust in digital health solutions. Moreover, we need to bear in mind that such powerful innovations need to be handled thoughtfully.

The Impact of the COVID-19 pandemic has triggered a major effect on the digital health market and increased services of Telemedicine:

- The global COVID-19 pandemic has led to significant market growth in digital health services (30% increase)
- Many countries have eased the medico-legal framework for providing digital health services
- Currently there are massive investments in digital health companies (multiple of 10-15x turnover) and we certainly have a massive overvaluation of the market which will lead to a secondary consolidation
- What remains open now is primarily the sustainability of market growth

Andy Fischer studied medicine before graduating in specialist studies in surgery and emergency medicine and was a physician in the Swiss emergency helicopter service (REGA) until 2006. In 1999 Andy Fischer founded Medgate and has led the entire Medgate group since then as CEO.

Andy Fischer is President of the International Society for Telemedicine and eHealth (ISfTeH). Since 2008 Medgate has been lecturing in Telemedicine at the University of Zurich.

Further Mandates are:

- Board Member Medgate Group
- Board Member of the University Children's Hospital, Basel (UKBB)
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Medgate brings the doctor to where patients need him, supported by digital health solutions. More than 300 motivated staff members share our goal of improving healthcare. Since 2000, Medgate has operated the Medgate Tele Clinic, the largest telemedicine center in Europe. For local consultations, patients can also consult Medgate Mini Clinics as well as the doctors and clinics of the Medgate Partner Network.

With Medgate International, Medgate is exporting its successful and well-established digital health and telemedicine concept to other countries. The first telemedicine center to follow the Medgate principle outside Switzerland was opened in the United Arab Emirates in 2014. Several countries have been added since then, and more are planned. Medgate is currently also present in Germany, the Philippines and India. Further locations are planned for Malaysia, Thailand and Indonesia. www.medgate.ch

International Society for Telemedicine and eHealth (ISfTeH)

The ISfTeH is the international parent body for telemedicine and e-health, founded in 1997. It has members in over 70 countries, drawn from national organizations, service providers, companies and individuals. The organization's aim is the promotion, coordination and support of telemedicine projects and activities throughout the world. The ISfTeH works closely with the World Health Organization (WHO) as a non-governmental organization. www.isfteh.org



Andy Fischer

Telemedicine and telecare are opening the medical digital transformation in Japan

Hiroshi Kondoh, MD, PhD

President of JTTA

In the 1990s Telepathology and Teleradiology became widespread in Japan. In the 2000s, EMR was introduced in many large hospitals by government policy, and the EMR Sharing system was expanded with government assistance in the 2010s. On the other hand, the online medical clinics using smartphones spread in 2018 with the coverage of National Health Insurance. However, the indications were narrow, so the use of online medical clinic had been shrinking.

With COVID-19 pandemic, many patients want to avoid on-site, so the use of online medical clinic has increased. Since there are few specialists in treating patients with severe infectious diseases in Japan, it became clear that the pandemic of COVID-19 needs to share ICU information to support the treatment of critically ill patients. It is expected that the introduction of tele-ICU in Japan will begin in the near future.

In Japan, monitoring of exercise amount, blood pressure, weight, and sleep measurement using smartphones is active, but there is little development of mobile health devices such as digital stethoscopes. On the digital therapeutics a smoking cessation support system has been recognized by National Health Insurance recently.

The government is supporting the development of communication robots and rehabilitation support robots. On the other hand, video analysis and voice analysis are developed in other fields, the application to medical field is expected.



Hiroshi Kondoh

Connecting people with telemedicine

Takayuki Kori, MD, PhD

Chair of the 25th ISfTeH International Conference
Department of Surgery, Tone Central Hospital

In today's world, the shortage of physicians has led to a serious problem of uneven regionalization of medical services. This is a burden on both the residents and the doctors who work in such situations. Telemedicine offers a solution to this problem by providing sustainable medical services.

Even in Japan, where the healthcare system is well-developed, the shortage of doctors in rural areas of the country is weakening the emergency care system. In 2010, we established a remote diagnostic imaging system that allows doctors at multiple facilities in the region to share imaging information to help diagnose and treat patients. This system has enabled rapid consultation between facilities without having to send medical images by mail or send patients to another hospital--leading to fewer unnecessary patient transfers and missed critical illnesses. In addition, the development of a system that allows physicians on call at home to view hospital images from their home devices has reduced physician attendance during nighttime holidays by 80 percent.

In addition, in February 2015, we introduced a telemedicine system to areas in Bangladesh where there are no physicians available to screen and treat chronic arsenic patients, and we continue to provide telemedicine services to this day.

For underdeveloped areas, telemedicine is an important infrastructure for connecting patients and doctors. In developing countries where the shortage of physicians is a problem, telemedicine is expected to play a greater role than in Japan. As a result, the need for support for the introduction of telemedicine is likely to increase in the future.

Keywords : telemedicine, SDGs, remote diagnostic imaging

Dr.Kori graduated from the Gunma University in 1994, and got PhD in 2007 in Gunma University. He has professional qualifications in general surgery, respiratory surgery, bronchoscopy, infection control and nutrition therapy. He also holds a national certification as a systems administrator.

Present position

- 2007- Head, Department of Surgery, Tone central hospital
- 2016- President, Asia telemedicine laboratory
- 2019- Visiting Professor, Maebashi Institute of Technology

Social activity

- 2008-2018 Co-Investigator of the Telemedicine Research Group, Ministry of Health, Labour and Welfare, Japan.
- Director, The Telemedicine Society of Japan
- Vice president, Japan telemedicine association
- Representative, Japanese Society for Clinical Nutrition and Metabolism

Memberships in addition to ISfTeH include the Japan Telemedicine and Telecare Association, Japan Surgery Society, amongst others.



Takayuki Kori

Joint Invited Lecture

IJL1	Chair	Yuichiro Saito	Gunma University Hospital	
IJL1-1		Digital health education in the context of CONEDIG		
		Georgi Chaltikyan	European Campus Rottal-Inn (ECRI)	8
IJL1-2		Telemedicine for general practice : Telemedicine in Japan, at present and future		
		Haruo Kuroki	Medical Corporation Shigyonokai, Sotobo-Children's Clinic	9
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		Taishiro Kishimoto	Department of Neuropsychiatry, Keio University School of Medicine	10
IJL2	Chair	Akimune Fukushima	Department of Clinical Genetics, School of Medicine, Iwate Medical University.	
IJL2-1		Telemedicine Support for newborn resuscitation		
		Jennifer L. Fang	Division of Neonatal Medicine, Mayo Clinic, Rochester, MN, USA	11
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		-Teleconsultation of the expecting mothers are now receiving attention in midst of COVID-19 pandemic-		
		Kazuhiro Hara	Emeritus President of the Japanese Telemedicine and Telecare Association Emeritus Professor, Kagawa University Specially appointed professor, Seto Inland Sea Regional Research Center, Kagawa University	12
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		Ichiro Mori	Department of Pathology, School of Medicine, International University of Health and Welfare	14

Digital health education in the context of CONEDIG overview and recent developments

Chaltikyan G, Fernandes F

Deggendorf Institute of Technology, European Campus Rottal-Inn, Germany

Digital technology for health services has revolutionized the healthcare system. With improving access to the Internet, a rapid development of myriad smart devices, and a 'tech savvy' generation, Digital Health is becoming one of the most important themes in healthcare sectors worldwide. With the additional potential of reducing healthcare cost, and growing enthusiasm of governments, Digital Health holds a promising future. Uniquely positioned at the intersection of healthcare and information technology, the domain of Digital Health builds on a variety of disciplines termed biomedical and health informatics, health telematics etc., and encompasses essential fields such as eHealth or Health Information Technology, telemedicine and telehealth, mHealth, digital therapeutics, as well as such advanced computing and communication technologies as Internet of Things, Big Data Analytics, Artificial Intelligence, or Blockchain. Important facets of data protection, legal and regulatory frameworks, and ethical aspects complete the picture.

Digital Health Education can take various forms, ranging from continuing medical education courses, capstone projects, and certificate courses, to undergraduate and postgraduate degree programs. It is paramount to streamline approaches to Digital Health Education across disciplinary, cultural and national boundaries, in order to address the challenges of firmly embedding Digital Health courses in the fabric of university education. Some of these challenges include insufficient infrastructure, lack of expertise and training opportunities for teachers, as well as an additional burden on educational systems. The lack of internationally accepted standards and common policies in Digital Health Education, has been the motivation behind the recent initiative of the Consortium of Educational Institutions in Digital Health (CONEDIG) under the auspices of the International Society for Telemedicine and eHealth (ISfTeH). With five higher education institutions from four continents becoming the founding members, the Consortium proceeded to developing the vision, mission, activities, and approaches to advancing Global Digital Health Education.

Keywords : Digital Health, Education, ISfTeH, CONEDIG

Georgi Chaltikyan, MD, PhD is professor of Digital Health, eHealth, Telemedicine and Healthcare Management at European Campus Rottal-Inn (ECRI), a branch of Deggendorf Institute of Technology (DITECRI) in Bavaria, Germany, and president of Armenian Association of Telemedicine (AATM).

Prof. Chaltikyan was one of the very first faculty at ECRI since its launch in 2015; he is the program director of Master of Medical Informatics (MMI), and is responsible for other study courses in healthcare and digital health, as well as for international collaborative projects and programs, such as the participation in the Consortium of Educational Institutions in Digital Health (CONEDIG) under the auspices of the ISfTeH. He has publications on different aspects of eHealth and telemedicine, and is involved in several research and development projects in digital health. Since 2019 he is a member of the WHO Digital Health Roster of Experts. He is also a part of the Armenian Digital Health Initiative being currently developed and implemented under the auspices of the Government of Armenia.



Georgi Chaltikyan

Telemedicine for general practice : Telemedicine in Japan, at present and future

Haruo Kuroki

Medical Corporation Shigyonokai, Sotobo-Children's Clinic

Online medicine(telemedicine) is the important and effective method in pediatric primary care. This method the new concept, following hospitalization, outpatient medicine and home healthcare. In our clinic, I introduced online-medicine in 2016, and have practiced medicine for about 1234 patients to November 2020. The diagnosis in our cases are various, including infantile asthma, patients with allergic rhinitis, children with neuro development disorder, patient with severe neuro-somatic disorder. The habitants of patients also various, not only far from the clinic. That means the online medicine is suitable for all patients, whose situation doctors can examine with synchronous video-chat communication.

This method could be reduced dramatically an ambulatory burden of patients. Thereby medical care without the limitation of distance would unfold than ever. Telemedicine system could improve the access to medical care, and it may change the concept of the community medicine.

The quality of information obtained by online medicine is different from outpatient medicine. Because communication by synchronous video-chat is private. So patients can be relaxed. The telemedicine is not only alternative method of outpatient medicine. It would lead patient-oriented and personalized medicine near future in Japan.

Since the timed and special measures associated with the spread of COVID-19 infection on 10th April 2020, telemedicine users have expanded, and the number of medical institutions deployed has probably increased several to ten times. The removal of disease restrictions was big changes. After this measure, there were many patients aged 0-10 (many patients in pediatrics), and diseases and symptoms such as upper respiratory tract inflammation, fever, eczema, etc. were the top. This indicates that disease restrictions have been removed and are being used in daily medical care.

Keywords : Telemedicine, general practice, uneven distribution of medicine, COVID-19

Haruo Kuroki, MD, PhD
Director, Medical Corporation Shigyo-no-kai, Sotobo children's Clinic
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1957 born in Tokyo, Japan.
1984 Graduated from Chiba University School of Medicine
Chiba University School of Medicine, instructor
2005 established Sotobo children's Clinic
2008 Established Medical Corporation Shigyo-no-kai

At present

2018 Member, The Ministry of Health, Labour and Welfare, Guideline Examination meeting about appropriate implementation of Telemedical
2020 Commissioner, Japan Medical Association, Exploratory committee about Telemedicine

Manager, Japanese Telemedicine and Telecare Association
Chief, Telemedicine subcommittee meeting
Medical specialist, Japan Pediatric Society



Haruo Kuroki

What evidence will be needed for telepsychiatry considering its use during and following the COVID-19 pandemic?

Taishiro Kishimoto, MD, PhD

Department of Neuropsychiatry, Keio University School of Medicine

The COVID-19 pandemic has had a significant effect on medical practices around the world and made it difficult to continue providing medical services. The field of psychiatry has not been immune to these changes. It has been reported that the risk of developing depression, anxiety disorders, and obsessive-compulsive disorders has grown substantially during the pandemic due to increased concerns over being infected, economic anxieties, discrimination, altered lifestyles, etc. As healthcare professionals struggle to continue providing patient care and the number of new patients increases, the use of telemedicine within the field of psychiatry has shown a great deal of promise in providing a path forward during these difficult times. Based on a survey of 17 different countries, it was found that many countries have eased regulations concerning telemedicine to make it easier to implement. It is difficult to precisely discern the details of which regions are using telemedicine and to what extent, but it is certain that telemedicine use is expanding at a world-wide level. Given this reality, we must ask: what should the goals of telepsychiatry be moving forward, and what evidence is needed to achieve those goals?

This presentation will review the current evidence for telemedicine, and discuss what evidence may be needed during and after the pandemic. Additionally, there will be a discussion on how the use of IT and Big Data during and following the pandemic may affect the field of psychiatry in the coming years.

Dr. Taishiro Kishimoto is an Associate Professor of Neuropsychiatry at Keio University School of Medicine, Tokyo, Japan. He also holds concurrent positions as Assistant Investigator at the Feinstein Institute for Medical Research at the Zucker Hillside Hospital, and as Assistant Professor of Psychiatry at the Donald and Barbara Zucker School of Medicine at Hofstra/Northwell, both in New York, USA.

Dr. Kishimoto graduated from Keio University School of Medicine in 2000. After completing his psychiatry residencies, Dr. Kishimoto was appointed to the medical staff at Oizumi Hospital, and eventually became Chief Physician there. After he was awarded his PhD degree from Keio University School of Medicine in 2009, he moved to the Zucker Hillside Hospital, New York. After 3.5 years' experience as a post-doctoral research fellow, he moved back to Japan in the spring of 2013 and rejoined the Neuropsychiatry Department at Keio University School of Medicine.

Dr. Kishimoto's main area of research has been psychopharmacology, but has expanded to include the utilization of technology and machine learning in psychiatry. He has received more than ten awards, including the NCDEU New Investigator Award, the Paul Janssen Award from the Japanese Society of Clinical Neuropsychopharmacology, and the Keio Rising Star Award.



Taishiro Kishimoto

Telemedicine support for newborn resuscitation

Jennifer L. Fang, MD, MS

Division of Neonatal Medicine, Mayo Clinic, Rochester, MN, USA

Approximately 10% of newborns require assistance to begin breathing after birth, and 1 in 1,000 will require extensive resuscitation. Newborns needing advanced resuscitation, especially those born preterm, are at increased risk of mortality and serious morbidity when delivered at hospitals without a neonatal intensive care unit (NICU). Synchronous video telemedicine consults with a remote neonatologist (termed teleneonatology) can support care teams in smaller birth hospitals during newborn emergencies. Teleneonatology has been shown to improve the quality of newborn resuscitation, facilitate patient triage, and achieve high levels of staff satisfaction. In a retrospective cohort study, teleneonatology significantly improved resuscitation quality for neonates born in hospitals without a NICU when compared to matched controls (median quality rating 7 vs 4, median difference=1, P=.002). Neonates in the telemedicine group were significantly more likely to have their temperature, blood glucose, and blood gas measures. These are important steps during newborn resuscitation and stabilization as hypothermia, hypoglycemia, and inadequate ventilation have been associated with poor outcomes. Using telemedicine to visualize the neonate and closely collaborate with staff in smaller hospitals reduces the odds of transport to a higher level of neonatal care by about 30%. Approximately one in three neonates is able to remain in the birth hospital following teleneonatology consultation. Teleneonatology can safely reduce unnecessary medical transports, improve bed utilization across a health system, and keep the newborn-family unit intact. Teleneonatology programs are very well received by both birth hospital staff and remote neonatologists. Satisfaction with teleneonatology, including measures of collaboration, team work, and communication, consistently exceeds 90%. Hospital systems that care for newborns should consider implementing a teleneonatology network to better support the care of neonates requiring advanced resuscitation after birth in a hospital without a NICU.

Keywords : Infant, newborn, telemedicine, resuscitation, transportation of patients

Jennifer L. Fang, MD, MS, FAAP
Consultant, Division of Neonatal Medicine, Mayo Clinic, Rochester, MN
Assistant Professor of Pediatrics, Mayo Clinic College of Medicine and Science
Medical Director, Teleneonatology Program
Medical Director, Neonatal Transport
Vice-Chair of Quality, Division of Neonatal Medicine
Executive Committee Member, American Academy of Pediatrics Section on Telehealth Care

Dr. Fang received her medical degree from the Mayo Clinic School of Medicine in Rochester, MN. She completed her pediatric residency at Lucile Packard Children's Hospital at Stanford University in Palo Alto, CA and her fellowship training in Neonatal-Perinatal Medicine at Mayo Clinic. She also holds a Master's degree in the Science of Health Care Delivery from Arizona State University in Tempe, AZ.

Dr. Fang is an Assistant Professor of Pediatrics and serves as the Medical Director of Mayo Clinic's Teleneonatology Program and Neonatal Transport Team. Over the past seven years, Dr. Fang has led the successful development and expansion of the teleneonatology program that serves 19 community hospitals in a two state region and has provided over 550 consultations. She has published leading edge research on teleneonatology and is frequently invited to share her expertise nationally and internationally. Dr. Fang currently serves on the American Academy of Pediatrics Section on Telehealth Care Executive Committee.



Jennifer L. Fang

Development of ultra-small mobile CTG and its effectiveness on remote monitoring of the expecting mothers, as well as its global expansion.

-Teleconsultation of the expecting mothers are now receiving attention in midst of COVID-19 pandemic-

Prof. Kazuhiro Hara, MD, PhD

Emeritus President of the Japanese Telemedicine and Telecare Association

Emeritus Professor, Kagawa University

Specially-appointed professor, Seto Inland Sea Regional Research Center, Kagawa University

The cardiocomonitor was developed back in the 1970s, but the device itself weighed more than 10kg, and its usage was limited within the hospital facility. About 50 years has passed since then, and the improvement of cardiocomonitor was seen gradually. Enhancements were performed in reducing the device size as well as incorporating wireless technologies to connect the device and the transducers, enabling users to move free within the facility while being measured. If devices are connected to the central monitor, all of the data from active devices can be observed in the staff room. There are recent attempts to send fetal heart rate pattern to distant doctors and nurses via internet, but many of the devices used to measure such data are still stationary type, and the expecting mothers have to be in the hospital setting to be measured.

Therefore, the mobile fetal monitoring system, the mobile CTG, that can be used outside the hospital setting is now receiving attentions. We have been developing such device since the 1990s, and with recent trend of mobile devices like cellphone and smartphone, we developed a portable system (2kg weight). This system was implemented in Iwate Prefecture's "Ihatov" system, as well as Japan's remote islands like Okushiri Island and Amami Island. Additionally, it was used abroad in countries like Thailand, Laos, and Myanmar. Recent addition to that list is the country of Bhutan, in which the devices were implemented with reimbursement from the UN.

The recent trend of downsizing the mobile devices demanded our mobile CTG to follow the same tendency, which made us decide to develop a brand new ultra small mobile CTG "Petit CTG". Upon developing it, we were not so much captured with the conventional technologies but rather basing everything on a new concept.

The Petit CTG system is made up of ultrasound transducer for detecting fetal heart rate (166g), a toco transducer for detecting uterine contraction (137g), and a tablet device. Transducers and the tablet are connected via Bluetooth. Once the data is transmitted to the tablet, the information is then transmitted to its destination via 3G/4G network or Wi-Fi network within hospital or household setting, allowing data to be monitored from virtually anywhere. The cardiocomonitor system from 1970s weighed up to 15kg (including the cart), whereas the Petit CTG's weight is about 300g (total weight of 2 transducers), reducing its weight up to 1/40 to 1/50 from the past devices. Petit CTG is connected to cloud server, which means that if the user has an internet connection, he or she can view data and monitor the well being of the fetus from anywhere in the world.

Response to the COVID-19 pandemic

In response to the recent outbreak and widespread pandemic of COVID-19, the telemedicine and teleconsultation is starting to get accepted widely.

The biggest concern for expecting mothers nowadays is how to prevent themselves from getting a disease. Unlike caring for chronic illness like high blood pressure and diabetes, pregnancy monitoring involves the checking of the well being of fetus, and that is especially difficult to do when making diagnosis remotely.

Currently, Hokkaido University has started the test usage of Petit CTG and its results are promising, gathering interests from worldwide. In this webinar, the issue of remote checkup of the expecting mother as a preventative measure for COVID-19 will be covered.

Keywords : Telemedicine, Perinatal medicine, Mobile CTG, iCTG, SDGs3

EDUCATION	MASTER OF MEDICINE	March, 1970
	University of Tokyo, Faculty of Medicine · concentration in obstetrics and gynecology	
VOCATION	OBSTETRICS AND GYNECOLOGY STUDIES CLASS	June, 1970
	University of Tokyo, Faculty of Medicine	
	DOCTOR OF MEDICAL SCIENCE,	May, 1979
	Tokyo University	
	ALEXANDER VON HUMBOLDT-STIFTUNG/FOUNDATION STUDY ABROAD	September, 1980 to June, 1982
	Heidelberg University, Germany, OB department studies class.	
	RESEARCH ASSISTANT	January, 1973 to March, 1980
	Obstetrics and Gynecology department, Tokyo University · developing the fetal monitor and ultrasound diagnostic equipment	
	ASSISTANT PROFESSOR	April, 1980 to November, 2000
	Department of Perinatology, Kagawa Medical University	
PROFESSOR	December, 2000 to March, 2009	
Department of Medical Information, Kagawa Medical University Hospital		
EMERITUS PROFESSOR	April, 2009 to present	
Kagawa University.		
SPECIALLY APPOINTED PROFESSOR	April, 2009 to present	
Seto Inland Sea Regional Research Center, Kagawa University.		
CHAIRPERSON	October, 2010 to present	
NPO e-HCIK (e-Health Care Innovation in Kagawa)		
EMERITUS PRESIDENT	2017 to present	
Japanese Telemedicine and Telecare Association		
SUPERVISOR	2017 to present	
Kagawa Medical Association.		



Kazuhiro Hara

Monitoring the development of health information systems in Finland– 17 years of experience

Prof. Jarmo Reponen, MD, PhD

University of Oulu, Finland

Finland has a comprehensive digital health environment extending from local health service providers to national health information exchange level. University of Oulu has been since 2003 in charge of assessing the availability and intensity of use for health information systems in the country. All the public health care institutions are included to the regular surveys as well as most prominent private institutions. Currently, this research is an established part of “Social and Healthcare eService Monitoring” (STEPS), financed by the Ministry of Social Affairs and Health.

Every three years this availability and use information is collected about electronic medical record systems with their auxiliary systems (imaging, laboratory, etc.), used standards, regional information exchange, decision support systems including artificial intelligence, services provided directly to citizens, secondary use of health data, information security and safety, digital skill and user support, and co-development activities.

The published results are used in the creation of national eHealth and digital health strategies and policies as well as in the follow-up of their implementation. The indicators have been beneficial in the international benchmarking among EU and OECD countries as well as in WHO studies. In the national level, the results have made it possible to understand the findings of other STEPS substudies performed in collaboration with the Finnish Institute for Health and Welfare, like the user experience studies of information systems for physician and nurses. The health care regions in the country can also benchmark their eHealth maturity levels.

The 17 years of experience of these studies show the digitalization pathway Finland has taken in the area of digital health. In the presentation, most recent results are compared to the development history.

Jarmo Reponen is MD, PhD, radiologist with a special competence in healthcare information systems. His current position is Professor of Practice for health information systems at the Medical Imaging, Physics and Technology (MIPT) research group, Faculty of Medicine, University of Oulu, Finland. Besides a long experience as a chief radiologist, he has more than 30 years of experience in the development, implementation and evaluation of hospital information systems, especially in the field of electronic medical records and radiology systems. Reponen is the responsible teacher for the special competence of healthcare information technology for Finnish physicians, dentists and veterinarians and most recently project leader in the MEDigi project for the digitalization of Finnish medical and dental undergraduate education. He has served in the boards of Finnish, Nordic and International societies of telemedicine eHealth and has been in charge of organizing many international conferences in the field.



Jarmo Reponen

Digital transformation (DX) of pathology diagnosis current status and issues

Prof. Ichiro Mori, MD, PhD

Department of Pathology, School of Medicine, International University of Health and Welfare

WSI scanners are improving. Scanning speed became faster, and accepts 1,000 glass slides at a time. Some hospitals already start digitalization of all the histology slides. On the way of this digital transformation, several issues were revealed. Today, I would like to introduce current status of Japanese digital pathology.

Scanning so many slides at a time may results scanning miss out. Scanners may not be able to find pale stained tissue at the edge or negative immunostain. As an environment of digital pathology diagnosis, we need multiple monitors, triple is better. This requires wide desk space for pathologists which may be difficult in relatively narrow Japanese pathology room. During Operation specimen diagnosis, we need wide slide tray image to get the whole view of the case. Some WSI viewer already have thumbnail images on WSI viewer, but usually up to 10 thumbnails. I think we need more. WSI format is different between each scanner makers. We already have DICOM standard format. If all the WSI images become DICOM format, I may select my favorite viewer.

Scanning cytology slide is different issue. To avoid huge size and long scanning time, I think LBC slide is minimum requirement. To scan thick cytology specimen with a slant plane and reconstruct whole thickness WSI is recently introduced. To establish the totally digitalized pathology laboratory, cytology screening is big issue. Most WSI viewers are designed for pathologist use. To screen slide in 1 minute, I think we need screening specialized WSI viewer.

Although several issues are still remaining, digital pathology is now suitable for practical use. We need just a few more steps for the goal.

Present Academic Ranks and Positions

Professor, Department of Pathology, School of Medicine, International University of Health and Welfare

Education

Medical School: Gunma University School of Medicine, 1970-1976,

MD Degree

Graduate School: Graduate school of Gunma University, 1976-1980,

PhD Degree



Ichiro Mori

International Symposium

ISY1 Application of new technology to telemedicine

Chair	Hiroki Matsumoto	Maebashi Institute of Technology
Chair	Tomomi Ogawa	Tokyo Denki University

Recently, the progress of communication technology and information processing technology which support remote medicine, has been remarkable. For example, in communication technology, 5G technology can be constructed. In information processing technology, we have established individual technologies such as AI and independent component analysis for diagnosis support. On the other hand, it is difficult to say that these new technologies have been fully applied to telemedicine. However, it is desired that these be used in each country and region.

Therefore, in this session, first, we will introduce new technologies that are expected to be applied to telemedicine. Next, under the world situation of corona vortex, we will discuss the ideal way of the telemedicine system that matches the actual situation of the country and region in the future.

ISY1-1 Reimagining the delivery of care model – looking inside the brick and mortar via a digital window.

Thomas Foley	AMD Global Telemedicine	20
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ISY1-2 Leveraging artificial intelligence and other technologies for mitigating challenges faced by citizens with physical disabilities

Vimal Waklu	Telecommunications Consultants India	21
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ISY1-3 Sharing clinical information with patients as a data hub: How can we extract medical information from hospitals?

Akinori Moriichi	Division of Specific Pediatric Chronic Diseases, Research Institute, National Center for Child Health and Development	22
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ISY1-4 Effectiveness of acute disease pre-detection by vital data telemonitoring

○ Naoki Kobayashi¹, Hinako Okazaki², Masahiro Ishikawa¹, Satoki Homma^{3,4}

1) Faculty of Health and Medical Care, Saitama Medical University

2) Shijinkai Group Ken-o Tokorozawa Hospital

3) Faculty of Nursing and Medical Care, Keio University & Keio Research Institute at SFC

4) Health Care Center of Saitama Medical Center

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ISY1-5 DOCOMO 5G Status and Its Application to Advanced Telemedicine

Yuji Aburakawa	6G Laboratories, NTT DOCOMO, INC.	24
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ISY2 How have telepsychiatry practices around the world changed due to the COVID-19 pandemic?

Chair	Taishiro Kishimoto	Department of Neuropsychiatry, Keio University School of Medicine
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In order to reduce the risk of infection during the COVID-19 pandemic, the use of telemedicine is increasing. Specifically, in the field of psychiatry, where care providers and patients interact mainly in the form of face-to-face conversations, telepsychiatry is playing an especially important role in overcoming difficulties associated with the pandemic. The presenters in this symposium have reviewed telemedicine regulation changes during the pandemic (Psychological Medicine, in press) in 17 countries.

In this symposium, representatives from Italy, India, the USA, Canada, and Japan will speak about the history of telepsychiatry in their respective countries, how regulations have been relaxed due to the pandemic, the practical application and settings of telepsychiatry, and other recent changes in telepsychiatry related to COVID-19. We hope this forum provides an opportunity to discuss each country's differing insurance systems, infection rates, and attitudes toward telepsychiatry, as well as provide information on promising recent telepsychiatry developments overall.

ISY2-1 COVID-19 response: An overview of a survey of 17 countries and how the introduction of telemedicine in Japan is progressing

Taishiro Kishimoto	Department of Neuropsychiatry, Keio University School of Medicine	25
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ISY2-2 Virtual mental health care: Beyond access to quality of care

Allison Crawford	Department of Psychiatry, University of Toronto	26
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ISY2-3	Telepsychiatry development in the United States The COVID revolution	Daniel Guinart The Donald and Barbara Zucker School of Medicine at Hofstra/Northwell, The Zucker Hillside Hospital, New York	27
ISY2-4	Telemedicine development in India and changes due to COVID-19.	Prakhar D. Jain Grant Government Medical College, Mumbai, India	28
ISY2-5	COH-FIT	Marco Solmi University of Padua, Italy	29

ISY3 Health support challenges through telenursing

Chair	Tomoko Kamei	Graduate School of Nursing Science, St. Luke's International University, Tokyo
Chair	Birthe Dinesen	Department of Health Science and Technology, Aalborg University

Telenursing is a part of Telehealth and support people/ patients from distance. Telenursing could efficiently provide people/ patients' monitoring and triage health status, and give teleconsultations & telementoring.
This symposium is an opportunity to discuss present and future telenursing as well as under the COVID-19 pandemic.

ISY3-1	Telenursing, telehealth and telerehabilitation during the COVID-19 pandemic – A global trend	Birthe Dinesen Professor, PhD & Head of Laboratory for Welfare Technologies - Telehealth & Telerehabilitation, Sport Sciences -Performance and Technology, Department of Health Science and Technology, Aalborg University, Denmark	30
ISY3-2	Implementing telenursing in population health management, Japan - Collaboration between national health insurers and nurses based on “Data Health Plan”	Michiko Moriyama Graduate School of Biomedical and Health Sciences, Hiroshima University Ex Chairperson of DPP Heath Partners, CO., LTD.	31
ISY3-3	Smartphone app for improving midwifery care in Tanzania: A feasibility study	○ Yoko Shimpuku ¹ , Keiko Ito ² , Minami Suzuki ³ , Beatrice Mwilike ⁴ , Dorkasi Mwakawanga ⁴ 1) Hiroshima University 2) Kyoto University Hospital 3) Castalia Co. Ltd., 4) Muhimbili University of Health and Allied Sciences	32
ISY3-4	Home-monitoring-based telenursing for people with chronic disease under the COVID-19 pandemic	Tomoko Kamei Graduate School of Nursing Science, St. Luke's International University, Tokyo	33
ISY3-5	Telehealth nursing research 2020: Evidence for practice	Claudia Bartz ISfTeH Board	34

ISY4 The current use and the prospect of location flexible clinical trials

Chair	Masahiro Okura	Tokyo University
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ISY4-1	How smartwatches and fitness tracker can revolutionize digital health and medical studies and which limitation exist today and tomorrow	Jörn Watzke Garmin International	35
ISY4-2	COVID-19 and clinical trials: The medidata perspective	Jackie Kent Medidata Solutions.inc	36

ISY4-3	Beyond COVID-19: New ways of conducting clinical trials			
	Atsushi Kitamura	Pfizer R&D Japan		37

ISY4-4	Bringing trials closer to the patient through digital capabilities and enabling services such as telemedicine, mobile nursing and direct to patient IMP delivery			
	Angeli Dogra, Frederique Goulart	Novartis Pharma AG		38

ISY5 The impact of COVID-19 on medical education and communications

Chair **Tomohiko Moriyama** Kyushu University Hospital

COVID-19 pandemic changed our lifestyles. For prevention of further spread, in-person meetings have been dramatically replaced by remote meetings everywhere in the world. Although medical institutes should keep open for taking care of patients even in this tough situation, many medical personnel attempted new challenges to protect patients, medical staffs, medical students, and ourselves from COVID-19. In this session, medical doctors, educators and engineers will talk what they have done for clinical practice and medical education under restrictions of daily living. We hope to discuss what "new normal" is in medical field.

ISY5-1	Remote education and telemedicine in NTU College of medicine and hospital during COVID-19 pandemics			
	Lu-Cheng Kuo	Department of Internal Medicine, National Taiwan University College of Medicine		39

ISY5-2	Telemedicine in the Philippines			
	Digital transformation in the era of COVID-19			
	Vittoria Vanessa Velasquez	St. Luke's Medical Center College of Medicine		40

ISY5-3	Telemedicine in medical education at INCMNSZ			
	Virtual medical education			
	Miguel A. Tanimoto	National Institute of Medical Sciences and Nutrition Salvador Zubiran (INCMNSZ), Mexico City		41

ISY5-4	Build, collaborate and disseminate knowledge networks			
	How to construct, sustain and pave the evolution of health collaborative networks supported by regional and national research and education networks			
	Luiz Ary Messina	RNP Rede Nacional de Ensino e Pesquisa, ABTms Associação Brasileira de Telemedicina e Telessaúde		42

ISY5-5	Remote medical education: Application in COVID-19 era			
	○ Kuriko Kudo, Tomohiko Moriyama, and Shuji Shimizu	International Medical Department, Kyushu University Hospital		43

ISY6 Application of telemedicine to support tobacco cessation

Chair **Ikuo Tofukuji** Takasaki University of Health and Welfare

In 1997, Dr. Yuko Takahashi established the Japanese telemedicine smoking cessation program Kinen Marathon. Kinen Marathon is based on email communication and mail magazine services. It supports many people in their effort to quit and abstain from smoking and has made a large community of former smokers.

In 2018, the Ministry of Health, Labour and Welfare approved the application of online patient care to tobacco cessation therapy and the related medical insurance.

In 2020, the Ministry of Health, Labour and Welfare approved Japan's first digital therapeutic program for tobacco cessation, CureApp SC, which was developed by Dr. Kohta Satake.

Digital therapeutics will be widely used in the treatment of other conditions, including lifestyle-related diseases, in the near future. In this symposium, we will discuss the application of telemedicine and digital therapy to tobacco cessation programs with special speakers invited from the United States, Korea, and Japan. Please join this symposium if you are interested in learning more about the new methodologies of modern medicine.

ISY6-1 Application of telemedicine to support tobacco cessation

Ikuo Tofukuji Takasaki University of Health and Welfare, Takasaki, Gunma 44

ISY6-2 Tobacco, alcohol, drug and digital therapeutics - The case of MoHW & MFDS in South Korea

Sean G. Kang WELT Corporation, 45

ISY6-3 The use of digital therapeutics in smoking cessation : Current trends in the united states

Ravi S. Nunna Swedish Neuroscience Institute, Seattle, WA 46

ISY6-4 Clinical evidence of telemedicine and digital therapeutics for smoking cessation in Japan

Kohta Satake
Department of Respiratory Medicine, Japanese Red Cross Medical Center
CureApp Institute, CureApp, Inc. 47

ISY7 Updates in tele-cardiology

Chair **Alexandru Mischie** Centre Hospitalier de Montluçon
Chair **Dan Gaita** University of Medicine Victor Babes

Our webinar was hosted by Professor Dan Gaita, FESC, Vice President of Romanian Society of Cardiology, Board Member of European Society of Cardiology, Board Member of European Heart Network, University of Medicine Victor Babes, Romania and Dr. Alexandru Mischie, MD, PhD, FAHA, FESC, Head of Interventional Cardiology Department, Centre Hospitalier Montluçon, France, Chair of the Tele-Cardiology Working Group ISfTeH

ISY7-1 Updates in hypertension

Stefano Omboni
Italian Institute of Telemedicine, Italy
Scientific Department of Cardiology, Sechenov First Moscow State Medical University, Moscow, Russian Federation 48

ISY7-2 Updates in cardiac care and COVID-19

Daryna Chernikova
Cardiology Department, City Hospital, Kramatorsk, Ukraine 49

ISY7-3 Updates in heart failure

Mihai Trofenciu
Vasile Goldis Western University of Arad, Romania 50

Reimagining the delivery of care model

– looking inside the brick and mortar via a digital window.

It's not a matter of virtual care delivery or the classic brick-and-mortar model; we will reimagine the delivery by looking into the digital window

Thomas Foley

AMD Global Telemedicine

COVID has forced healthcare providers to quickly respond to the new norm; hence telehealth transitioned from a nice to have to a must have service within their respective delivery of care model. Coupled with this demand, reimbursement policies quickly pivoted to respond. While COVID is not over it has heightened the awareness of wellness and distancing in context of transmittable conditions and the need to further protect the vulnerable. This session will explore the everlasting value regarding the continued use of Telehealth; As well, we will reimagine the delivery of care model in the context of an integrated delivery mode – delivering healthcare anywhere. The ability for a patient to engage Telehealth is more than a simple video visit between a doctor and patient; so instead of a patient calling their provider and waiting weeks for a scheduled encounter we establish a different starting point by walking through the digital front door. With the virtual care delivery model as the back drop – provider can rethink delivery of care protocol. We will explore the ability to scale the use of a telehealth from multiple perspectives ranging from asynchronous to synchronous encounters; as well, from low acuity to a high acuity encounters. Upon completion of this session you will have an enriched perspective of an integrated delivery of care model leading with telehealth; more importantly you will want to further explore adopting suggested models to enhance your patient's engagement.

Keywords : Healthcare, Wellness, Digital-health, Telehealth, Virtual

Leveraging artificial intelligence and other technologies for mitigating challenges faced by citizens with physical disabilities

Vimal Wakhlu

Telecommunications Consultants India

Leveraging Artificial Intelligence and other Technologies for Mitigating Challenges faced by Citizens with Physical Disabilities

Every society has to take care of its citizens with physical challenges. The quality of life of such individuals and their loved ones suffers severely due to these challenges. Internationally a lot of work is happening in this domain on all fronts. Modern Technologies including Artificial Intelligence, Internet of Things, Data Analytics, Robotics etc. offer hope for such citizens.

The objective of this presentation is to highlight how such technologies can mitigate challenges of such citizens to ensure that are able to reduce dependence on others, and take care of themselves.

Keywords : Artificial Intelligence, Physically challenged, Robotics, Internet of things

Sharing clinical information with patients as a data hub: How can we extract medical information from hospitals?

Akinori Moriichi

Division of Specific Pediatric Chronic Diseases, Research Institute,
National Center for Child Health and Development

Sharing clinical information across hospital boundaries is important for improving long-term outcomes for patients. However, a coordinated system that connects medical facilities directly has been not so successful due to a lack of human and financial resources. Japan has the highest number of hospitals and the fewest number of physicians among OECD countries. Therefore, it is difficult to establish a nationwide inter-institutional medical information network.

To overcome the disconnection of medical information between hospitals, we are currently implementing a data transfer system from the electric health record (EHR) to the personal health record (PHR). This concept has the potential to achieve long-term medical information sharing. Our system is unique in the following three ways: 1) The clinical information to be extracted is based on data entered by doctors and nurses as part of their clinical practice. Therefore, no re-entry is required for data sharing. 2) An EHR system in operation only needs to prepare the dataset in the output format that is easiest to deploy, leading to a reduction in implementation costs. The data collection system will “pull” data from the existing system and optimize the data format itself. 3) The medical information provided will be tailored to the data users, including visualizing the data in a way that patients can easily understand. Core medical information needed for patient follow-up belongs to the patient in this system. Clinical data can be transferred to other physicians with the patients’ informed consent. Patients serve as a data hub in the transfer of medical information.

Keywords : electric health records (EHR), personal health records (PHR), data sharing, very low birth weight infants

2018-present	Chief, Division of Specific Pediatric Chronic Diseases, Research Institute, Research Institute, National Centre for Child Health and Development.
2017-2018	Senior researcher, Department of Clinical Epidemiology, National Centre for Child Health and Development.
2016-2017	Researcher, Department of Clinical Epidemiology, National Centre for Child Health and Development.
2013-2015	Researcher, Department of Health Policy, National Centre for Child Health and Development.
2011-2013	Research associate, Maternity and Perinatal Care Center, Hokkaido University Hospital.
2011-2008	Clinical fellow, Maternity and Perinatal Care Center, Hokkaido University Hospital.



Akinori Moriichi

Effectiveness of acute disease pre-detection by vital data telemonitoring

○ Naoki Kobayashi¹, Hinako Okazaki², Masahiro Ishikawa¹, Satoki Homma^{3,4}

1) Faculty of Health and Medical Care, Saitama Medical University

2) Shijinkai Group Ken-o Tokorozawa Hospital

3) Faculty of Nursing and Medical Care, Keio University & Keio Research Institute at SFC

4) Health Care Center of Saitama Medical Center

In telecare for elderly with chronic disease, it is very important to detect deterioration in condition from changes in monitored biological information and notify the doctor of an alert. In this study, we investigated the alert detection method when analyzing multiple biological parameters. As a feasibility study we attempted to detect alerts for patients by two analysis methods: principal component analysis and machine learning. In the examination using principal component analysis, changes in certain biological information during health and illness were the first main factors. It was shown that there are some diseases that can be identified from changes in normal data depending on the primary and secondary principal components. On the other hand, it was also found that some diseases are difficult to detect. In addition, a study using a support vector machine (SVM) showed detection accuracy of 80% or more, but it would be necessary to accumulate data in the future in order to improve the accuracy rate.

Keywords: tele-monitoring, disease pre-detection system, Biosignal analysis, principal component analysis, machine learning

【学歴】

1981年 東工大学大学院・総合理工修士了

2000年 新潟大学自然科学博士課程了

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1981年4月～2008年3月 NTT研究所 画像通信研究部

2008年4月～ 現職 埼玉医大・保健医療学部・教授

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医用画像処理, 生体信号処理, 画像通信・符号化の研究に従事

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ISO/IEC JTC1 SC29 JPEG 国内委員会委員

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Naoki Kobayashi

DOCOMO 5G Status and its application to advanced telemedicine

Yuji Aburakawa

6G Laboratories, NTT DOCOMO, INC.

NTT DoCoMo started commercial service of the 5th generation mobile communication system (5G) on March 25, 2020. In the 5G era, it is expected that the wireless communication service, which has been considered mainly in the consumer market, will be widely applied as communication for the industrial world. Against this background, NTT DoCoMo has conducted numerous demonstration experiments with partner companies in various industries in the form of creating 5G use cases. One of the important areas of application is the medical field.

In this lecture, we will briefly introduce the situation of 5G at NTT DoCoMo, and for the area development and use case development that makes use of the features of 5G, we will use not only wireless technology but also the entire NW as a line infrastructure for the industrial world. The direction to be provided is described. In addition, we will introduce the basic direction and ongoing efforts to provide more advanced medical care toward the realization of solutions for the medical field, which is listed as an important 5G application area.

So far, including the 5G comprehensive demonstration test of the Ministry of Internal Affairs and Communications, we have demonstrated the cases where DoCoMo uses it for remote medical care between doctors with partners. As a result, we obtained multifaceted and favorable evaluation results from the medical professionals and related persons who participated in each verification test. Therefore, with a view to contributing as 5G toward the provision of more advanced medical care, we are working on a use case demonstration that utilizes 5G of smart medical systems. In particular, we will explain a demonstration experiment on the cooperation between SCOT® (Smart Cyber Operating Theater®) and 5G, which is being developed mainly by Tokyo Women's Medical University. In addition, we will introduce our efforts with a view to future remote robot surgery support. Taking advantage of the experience of such a series of demonstration tests, NTT DoCoMo will continue to promote it so that 5G can contribute to the more advanced medical field and realize it.

Keywords : 5G, Mobile Network, Telemedicine, SCOT

油川 雄司 (あぶらかわ ゆうじ)

1994年, 日本電信電話株式会社に入社, 無線通信, 光伝送, 電波伝搬の研究開発に従事.

1999年, NTT 移動通信網株式会社 (現 NTT ドコモ), 次世代移動通信向け無線アクセスネットワークの研究開発において広帯域無線リンク技術, 光空間通信技術の研究に従事.

2003年, 移動機のグローバル戦略と技術開発にかかわる業務に従事し, 主として海外ベンダとの連携体制の構築と施行.

2009年, 米国 CA 州に駐在しスタートアップ企業の経営戦略業務に従事.

2014年, 端末イノベーション技術開発業務に従事.

2019年より現職. 5G および 6G 移動通信技術を活用したユースケース開拓とその実証にかかわる業務を統括.

博士 (工学)



Yuji Aburakawa

COVID-19 response: An overview of a survey of 17 countries and how the introduction of telemedicine in Japan is progressing

Taishiro Kishimoto, MD, PhD

Department of Neuropsychiatry, Keio University School of Medicine

In 1997, the Japanese Ministry of Health, Labour and Welfare issued a statement acknowledging that telemedicine is not illegal under Japan's Medical Practitioners Act. Even so, telemedicine was not widely implemented following that decision, and the government released another report in 2015 that encouraged the use of telemedicine. This resulted in a surge in the number of telemedicine vendors, who now support Japan's current telemedicine infrastructure. However, this still did not lead to an overall expansion in telemedicine use; the number of institutions utilizing telemedicine are actually quite a small minority. This may be due to the way telemedicine is classified for health insurance purposes. Japanese citizens are required by law to enroll in health insurance and are used to paying low premiums for healthcare. However, the forms of medical care that are allowed via telemedicine within the public insurance system are quite restricted, and there is less reimbursement given to healthcare providers who use telemedicine, so there is not as much incentive for providers to proactively adopt telemedicine practices.

When the COVID-19 pandemic arose in 2020, it had a sizable effect on telemedicine regulations in Japan. Specifically, temporary easement of telemedicine regulations during the pandemic allowed for the treatment of almost all patients on public insurance, who had not previously been eligible, and also allowed for telemedicine treatment to begin from a patient's first visit.

However, it is clear that Japan is still trailing behind other countries in its implementation of telemedicine. Reasons for this may include the fact that healthcare provider reimbursement for telemedicine practices is still lower than that for in-person treatments, and that there are no incentives for medical institutions to proactively adopt telemedicine. Despite those issues, as of now in December 2020, Japan is facing a third wave of the COVID-19 pandemic and there is a renewed focus on how to utilize telemedicine to address the situation.

This presentation will provide a brief overview of the regulatory trends related to telemedicine in 17 different countries, and as well as a review of how the implementation of telemedicine in Japan is progressing in response to the COVID-19 pandemic.

Dr. Taishiro Kishimoto is an Associate Professor of Neuropsychiatry at Keio University School of Medicine, Tokyo, Japan. He also holds concurrent positions as Assistant Investigator at the Feinstein Institute for Medical Research at the Zucker Hillside Hospital, and as Assistant Professor of Psychiatry at the Donald and Barbara Zucker School of Medicine at Hofstra/Northwell, both in New York, USA.

Dr. Kishimoto graduated from Keio University School of Medicine in 2000. After completing his psychiatry residencies, Dr. Kishimoto was appointed to the medical staff at Oizumi Hospital, and eventually became Chief Physician there. After he was awarded his PhD degree from Keio University School of Medicine in 2009, he moved to the Zucker Hillside Hospital, New York. After 3.5 years' experience as a post-doctoral research fellow, he moved back to Japan in the spring of 2013 and rejoined the Neuropsychiatry Department at Keio University School of Medicine.

Dr. Kishimoto's main area of research has been psychopharmacology, but has expanded to include the utilization of technology and machine learning in psychiatry. He has received more than ten awards, including the NCDEU New Investigator Award, the Paul Janssen Award from the Japanese Society of Clinical Neuropharmacology, and the Keio Rising Star Award.



Taishiro Kishimoto

Virtual mental health care: Beyond access to quality of care

Allison Crawford, MD, PhD

University of Toronto, Department of Psychiatry

The COVID-19 pandemic has led to the cancellation of most non-urgent, in-person mental health and substance use care, compounding the pre-existing problem of access to mental health and addictions care for people in Canada (Findlay, Arim, & Kohen 2020; Koushik 2020; Serhal et al. 2017). These public health measures tasked entire healthcare systems to change the way they deliver mental health services, including a large-scale shift away from in-person care to digital or virtual delivery of care for many mental health services. As a result, we saw rapid and large increases in use of technology for the delivery of mental health care (Torous et al. 2020; Fisk et al. 2020; Ohannessian et al. 2020). This rapid implementation of virtual care has been facilitated by relaxed regulations and amendments to funding of health services in many provinces. According to a recent survey, 38% of people in Canada would prefer to continue receiving virtual health care, and the majority would like to see virtual care continue as an option (Abacus/Canadian Medical Association 2020). And yet there are evident challenges with virtual care that urgently need to be addressed in order to sustain this initial rapid scaling. We must move beyond simply creating access to virtual care, and consider how to provide quality of care. This presentation will focus on two aspects of quality of care – person-centered care and equity – and will outline current measures to advance digital health equity and person-centered quality virtual care (Crawford & Serhal 2020; Serhal, Kirvan, Sanches, Crawford 2020).

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Keywords : Virtual Care, Mental Health, digital health equity, quality of care, person-centered care

Allison Crawford is an Associate Professor in the Department of Psychiatry at the University of Toronto, and a psychiatrist and clinician scientist at the Centre for Addiction and Mental Health, where she is Associate Chief of Virtual Mental Health and Outreach, and the Chief Medical Officer for the Canadian Suicide Prevention Service. Allison is co-chair of ECHO Ontario (www.echoontario.ca). Her research interests include the use of virtual health to increase access to quality mental health care, with a focus on patient experience of virtual care, digital health equity, and digital compassion (www.healthequityART.com).



Allison Crawford

Telepsychiatry development in the United States The COVID-19 revolution

Daniel Guinart, MD, MSc, PhD

The Zucker Hillside Hospital, New York
The Donald and Barbara Zucker School of Medicine at Hofstra/Northwell

Telehealth, which refers to providing healthcare while not in-person, is not a new concept. As early as 1879, the use of the newly invented telephone was suggested to reduce unnecessary office visits, but it was not until much later, in the 1970s, when the first attempt to provide remote medical care involving two-way television, radio, and remote telemetry was implemented on the Papago Indians, a remote native American community. In mental health, the use of telemedicine, known as telepsychiatry, is considered to have started during the 1950s, when the Nebraska Psychiatric Institute used early videoconferencing to provide group therapy, consultation-liaison psychiatry, and medical student training at the Nebraska state hospital in Norfolk. However, it was not until after the 1990s that telepsychiatry expanded further across the US -and the world- in relation to the expansion of the internet and mobile technology. Since then, a body of scientific literature shows generally positive attitudes from patients and clinicians, and that effectiveness, and outcomes of telepsychiatry are comparable to in-person care in multiple disorders, treatments, and populations. Despite this, however, telepsychiatry implementation has been seemingly restricted to a subset of unevenly distributed clinics and clinicians, mostly rural/remote regions, or patients with mobility problems.

The unprecedented COVID-19 crisis forced our healthcare system, and many others around the world, to massively and rapidly transition all or almost all in-person visits to telepsychiatry, not just for outpatient but also inpatient services, which was accompanied by an unprecedented lifting of federal, state and local regulations, generating a true revolution in telepsychiatry use and implementation. Patient and clinician attitude surveys are starting to come out, showing a positive evaluation among all stakeholders involved. However, long-term clinical outcomes of this transition are yet to be elucidated, and whether this situation will last and for how long is still unknown.

Keywords : History, Telepsychiatry, COVID-19

Daniel Guinart is Assistant Professor of Psychiatry at the Donald and Barbara Zucker School of Medicine at Hofstra University and Research Scientist at the Zucker Hillside Hospital, New York.

He completed his training in Psychiatry at Hospital del Mar, Barcelona, and he holds a Master of Science on Research in Mental Health and a Doctorate Degree in Neuroscience from the Autonomous University of Barcelona. He authors and coauthors several publications and book chapters, and his research focuses on psychopharmacology and clinical trials as well as the implementation of telepsychiatry and digital medicine to improve patient-centered outcomes in severe mental illness.



Daniel Guinart

Telemedicine development in India and changes due to COVID-19.

Prakhar Jain, MD

Grant Government Medical College, Mumbai, India

India is a large nation with a population of more than 121 crores. Due to this, the equitable distribution of healthcare services has always been a challenge, as majority (75%) of healthcare facilities are situated in urban areas, away from rural India, where 68.84% of the population resides. Telemedicine had proved to be one of the solution for bridging the gap due to inequitable distribution of healthcare services. First organised telemedicine initiative by the government started in 2001 which involved major technological institutes such as Indian Space Research Organisation (ISRO). Its main aim was to link multi-speciality hospitals to distant villages where minimal healthcare facilities were available. It wasn't late enough, when the Indian Health ministry took another step forward and a National Telemedicine Task Force was formed in 2005. For safe data transmission during telemedicine practice Electronic Health Record Standard was laid in 2013. Before COVID-19 pandemic, the Government of India already had a National Telemedicine Portal but with limited applicability and major restrictions, such as in types of drugs permitted to be prescribed. There were incidences when telemedicine practice by independently practicing doctors were criticised and discouraged by the media, medical fraternity and were even challenged in court of law. However, COVID-19 brought a sudden change in regulations and quick reforms were made to encourage use of telemedicine specially Telepsychiatry. It not only changed the Government's stand, but also of doctors, general public and even encouraged many technological companies to build telemedicine softwares for business. The national telemedicine practice guidelines were laid by the government within days of lockdown implementation with much detailing and increasing the scope of its practice. The telemedicine market in india now is expected to grow exponentially to 5.5 billion USD by 2025.

EDUCATION:

- Bachelor of Surgery and Bachelor of Medicine (Mbbs)
- Md in Psychiatry
- Fellowship in Neurodevelopment Paediatrics and Learning Disability

CURRENT DESIGNATION:

- Assistant Professor, Telepsychiatry Consultatant

CURRENT AFFILIATION:

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AWARDS:

1. Young Innovative Psychiatrist Award (2019)
2. Young Innovative Teacher Award (2019)
3. Travel Fellowship Award for Child Psychiatry
4. Dr A V Shah Best Paper Award
5. V G Joshi Grant

FOUNDER:

The Psychiatrist Says:, A 24 X 7 Mental & Emotional Crisis Intervention Service Through Telepsychiatry & Teletherapy.



Prakhar D Jain

COH-FIT

Marco Solmi, MD, PhD

University of Padua, Italy

The COH-FIT study (www.coh-fit.com) is a multi-wave global on-line anonymous survey aiming to measure the impact of COVID-19 pandemic on health and functioning of the general population. It has been translated in 31 languages, and has collected over 100,000 responses from over 140 countries. The COVID-19 pandemic has affected healthcare of people with chronic conditions. The COH-FIT study has the aim (among others), to assess how access to care has changed as a result of the COVID-19 pandemic. In the presentation dr. Solmi will present preliminary results on how access to care of people with chronic conditions has changed during COVID-19 pandemic, and what has become the role of telemedicine.

Keywords : COVID-19, access to care, telemedicine, chronic condition, mental health

Marco Solmi, is Assistant Professor of Psychiatry at the Department of Neuroscience, University of Padua. His three main clinical areas of interest are prevention/early intervention in psychiatry, comorbidity between medical and mental disorders, and psychopharmacology. From a methodological standpoint, he is mostly interested in meta-research, ranging from systematic reviews, meta-analyses, network meta-analyses, to umbrella reviews, and also in real-world data. He works as a psychiatrist, and his research has the ultimate aim to answer clinically relevant questions to ultimately improve physical and mental healthcare of subjects with or at risk of mental disorders. Marco has co-authored over 200 publications in peer-reviewed journals since 2014.



Marco Solmi

Telenursing, telehealth and telerehabilitation during the COVID-19 pandemic– A global trend

Birthe Dinesen

Professor, PhD & Head of Laboratory for Welfare Technologies - Telehealth & Telerehabilitation,
Sport Sciences -Performance and Technology, Department of Health Science and Technology,
Aalborg University, Denmark

The current coronavirus (COVID-19) pandemic has facilitated the use of telenursing, telehealth and telerehabilitation in the healthcare sector as a global trend with the aim of reducing the risk of cross-contamination caused by close contact. At a global scale the COVID-19 pandemic has occurred in more waves and the countries have had lock downs in more iterations in order to decrease the spread of the COVID-19 virus. The use of tele-technologies like videoconsultations and homemonitoring has been accelerated but the questions are: How do we maintain the use of the tele-technologies in clinical practice and create personalised and sustainable tele-technologies and programs beyond COVID-19? The recipe for implementation of tele-technologies is to ensure that: healthcare professionals receive appropriate education, reimbursement structure is in place, redesign of clinical models of care or rehabilitation, learning culture, and clear communication and mangement support in order to implement the tele-technologies on a routine basis in clinical practice. The question is if this recipe for implementation can be used or needs new elements past the pandemic?

Keywords : Telenursing, telehealth, telerehabilitation, COVID-19 pandemic, implementation

Implementing telenursing in population health management, Japan - Collaboration between national health insurers and nurses based on “Data Health Plan” -

Michiko Moriyama, RN, PhD

Graduate School of Biomedical and Health Sciences, Hiroshima University
Ex Chairperson of DPP Health Partners, CO., LTD.

Our nurse-led disease management company, entrepreneur rooted in Hiroshima University (Chronic Care & Family Nursing Lab) established and started in 2010, the headquarter in Hiroshima, 2 branches in Tokyo and Osaka. Since then, our company has been provided chronic disease management and care to whole nation of more than 600 health insurers (with about 2,000 medically high risk insured/individuals in each year). Also, we provide healthcare professional support services to companies who pursue “Healthy and Productivity Company”.

Following our innovation, Japanese government commenced the “Data Health Plan” to whole nation. This is a healthcare measure mandated on all health insurers to prevent disease onset, aggravation, and frailty.

Keys for success are 1) targeting high risk individuals based on analysis of health and long-term care claim data, and various health checkup data (Artificial Intelligence (AI) has been developed), 2) wholistic assessment of the individuals, 3) stratified disease management/self-management education and care management including decision-making support to the population, and 4) evaluation by clinically, health economically, and quality of life.

Our telenursing system strictly follows guidelines of the Personal Information Protection Law, adopts telephone, tablets/smart phone, and self-monitoring system such as Internet of things (IoT). Contents and skills to motivate participants and drive behavior changes created based on our qualitative (ethnographic) research and clinical research studies. The feasibility and long-term effectiveness have been also reported on academic journals.

Our goal is “Delivering nursing care & innovation developed by research studies to people all over the world”. The next challenges are 1) progress technology and contents innovation and 2) connecting to international projects and providing these services to developing regions.

Keywords : telenursing, population health management, disease management, health insurers, Data Health Plan

Smartphone app for improving midwifery care in Tanzania: A feasibility study

○ Yoko Shimpuku¹, Keiko Ito², Minami Suzuki³, Beatrice Mwilike⁴, Dorkasi Mwakawanga⁴

- 1) Hiroshima University 2) Kyoto University Hospital 3) Castalia Co. Ltd.,
4) Muhimbili University of Health and Allied Sciences

The World Health Organization published recommendations on antenatal care for a positive pregnancy experience in 2016. Based on these recommendations, we developed an educational smartphone application (app) for midwives in Tanzania so that frontline workers can access state of the art science in understandable languages with illustrations. The feasibility study's purpose was twofold: (1) to explore the feasibility of the app regarding continued use among midwives, and (2) to evaluate its effects on the learning outcomes of midwives in Tanzania. The app was developed using the Goocus format and included: a movie about birth preparedness in Swahili, localized illustrations and explanations on why the topics are important and how midwives can use them to care for women, a "by gestational week guide" for midwives to use in their antenatal care, a mini quiz for midwives to check their understanding, and a Bulletin Board System for midwives to discuss the topics. Twenty-four midwives downloaded and used the app, and 23 answered the mini quizz and the women-centered care questionnaire. Of those, 87.5% continued to study after 2 months, and 62.5% completed the study modules. Although the limited number of participants means that the results are statistically non-significant, increases in the mean scores from before and after the use of the app were observed on the mini quizz (6.8 and 8.4, respectively) and the women-centered care questionnaire (98.6 and 102.2, respectively). All agreed that the app motivated them to implement respectful midwifery care, provide more information to women, and helped women to be happier during pregnancy. Because we find that the app has the potential to have a positive effect, the next step is to expand the number of midwives using the app and evaluate the effect on women's knowledge and experiences.

Keywords : smartphone App, m-health, antenatal care, respectful care, midwifery

Home-monitoring-based telenursing for people with chronic disease under the COVID-19 pandemic

Tomoko Kamei

Graduate School of Nursing Science, St. Luke's International University, Tokyo

The value of home-monitoring-based telenursing (HMBTN) for people with chronic diseases (CDs) to assess their daily status has increased due to the COVID-19 pandemic. The Japanese government deregulated online health services in April 2020, and numerous physicians started online consultations with people with CDs and other ailments. The Ministry of Health, Labour and Welfare (MHLW) of Japan has reported that, by 2035, the quality, value, safety, and performance of healthcare must be improved by utilizing information communication technologies (ICTs) (MHLW, 2015).

The author developed an HMBTN system to provide continuous nursing care for people with CDs. Telenursing is defined as “the use of ICTs to provide nursing practice at a distance” (Kumar & Snooks, 2011). We monitor people’s daily psychosomatic state, provide triage services, and provide health consultations to manage their diseases over the long-term. Older adults with CDs experience multiple ups and downs in their illness trajectory, moving back and forth with their illness perceptions, and the telenurse follows up their self-care with a partnership.

Our data show that HMBTN can detect early changes in people with COPD, DM, and ALS (Kamei, et al., 2018); therefore telenursing allows us to provide early implementation of disease management to improve the quality of life for people with CDs. Conversely, telenursing education for undergraduate, graduate, and on the job education programs are not adequately provided in Japan. Only 22.2% of undergraduate nursing university programs have acknowledged having telenursing education curricula, however most programs provide only one to two hours of introduction to telenursing (Kamei et al., 2020). Therefore, education programs and quality assurance of telenursing systems have to be implemented during this pandemic and future development.

Keywords : Telenursing, Home-monitoring, Chronic disease, COVID-19 pandemic



Tomoko Kamei

Telehealth nursing research 2020: Evidence for practice

Claudia Bartz

ISfTeH Board

Research evidence is essential for best provision of care to patients, families and communities. The purpose of this presentation is to describe an analysis of nurse-led telehealth research for applications for practice. This work highlights the research role of nurses in digital health. Multi-journal literature searches by a professional librarian are being done on an iterative basis throughout 2020 to identify telemedicine and telehealth. 492 reports have been found through October. Nurse-led research publications involving telehealth are drawn from this data set and sorted into qualitative/descriptive designs and intervention designs. Studies that use intervention designs are being used in order to take advantage of strengthened reliability and validity of results, thus giving greater weight to their evidence for practice. In addition, systematic reviews (usually accompanied by meta-analyses) will also be included in the analysis as they bring synthesized results that can make a contribution to reliable and valid evidence for practice. Using these criteria, and as of 30 October, 24 reports fitting the criteria from 10 countries with a nurse as first-author have been identified. These reports range from randomized controlled trials to non-randomized intervention-control trials to pretest-posttest designs. Seven reports are systematic reviews (5 with meta-analyses). Study populations range widely, including: those with mental health needs, cardiovascular disease, cancer, chronic diseases acute care, and children. The presentation will briefly describe the studies' purpose, methods and results. Most emphasis will be on the description of evidence-based applications for practice. A reference list will be provided to presentation participants.

There are no applicable items for disclosure of conflicts of interest.

Keywords : telehealth, nursing, research, evidence

Claudia C Bartz, PhD, RN is an advocate for health, telehealth and nursing. She serves on the ISfTeH Board of Directors. She chaired the ISfTeH Telehealth Nursing Group for 10 years and was the Chair of the Telenursing Network for the International Council of Nursing from 2009 to 2015. She has published various articles on telehealth and has made many presentations on telehealth topics. She wrote the chapter, Telehealth – Telemedicine in the USA for the book, *A Century of Telemedicine: Curatio Sine Distantia et Tempora A World Wide Overview – Part II*, (2018). Dr Bartz is currently surveying education strategies for telehealth and nurse-led telehealth research that generates evidence for practice.



Claudia Bartz

Smartwatches can revolutionize digital health and medical studies

How smartwatches and fitness tracker can revolutionize digital health and medical studies and which limitation exist today and tomorrow

Joern Watzke

Senior Director Global Garmin Health Business, Garmin

- Show the history, development and future trend of smartwatches. Starting from pure running watches via smart watches to health companions
- Overview of B2B usage cases (corporate health, insurance companies, population health, Gyms, Telemedicine)
- Telemedicine trends and use cases
 - Rehabilitation (pre- and post-surgery)
 - Telemedicine (remote patient monitoring, real time data)
 - Elderly care homes
 - Clinical researches
- Consumer device in medical environment – How does it works? What is possible and what not?

Keywords : digitalhealth, telemedicine, Garmin, smartwatches, digitaltherapy

COVID-19 and clinical trials: The medidata perspective

Jackie Kent

Medidata Solutions, Inc.(US)

COVID-19 is challenging the life science, healthcare industries and humanity around the world in a way we have never been challenged before. Under these circumstances, we feel that the structures, processes, and lifestyles we are accustomed to are at a standstill, and we are forced to reevaluate the systems we are used to. Previously, our industry was already operating clinical trials in a highly regulated and complex regulatory environment. As clinical development becomes more sophisticated, new guidelines and corresponding technologies have been developed one after another. In Japan, the deregulation of telemedicine is a notable example under COVID-19, and in the area of clinical development, there has been IT solutions such as virtualization of clinical trials and central monitoring. But they did not gain widespread acceptance and did not go beyond the concept. Meanwhile, in response to the COVID-19 pandemic, the FDA and other regulators around the world are encouraging the continuation of active clinical trials, and in new guidance, many regulators around the world are pushing for the proactive application of technologies such as telemedicine interactions with patients, central monitoring, and the use of alternative data strategies to support the conduct of ongoing clinical trials. Obviously, these technologies are already well established and can be immediately incorporated into trials to ensure that thousands of clinical trials proceed in an environment where patients can stay at home instead of visiting an investigational site.

In this presentation, we will take a look at Medidata perspective, provide an overview of the current state and impact of clinical trials around the world under COVID-19, and introduce the next generation of technology-enabled clinical development.

Keywords : COVID-19, clinical trial, virtual trial, IT solutions, central monitoring

Beyond COVID-19: New ways of conducting clinical trials

Atsushi Kitamura

Pfizer R&D Japan

Because of the COVID-19 outbreak, regulatory authorities have granted permission to conduct clinical trials outside study sites (mainly in patients' homes) as an approach toward ensuring study continuity. This approach is similar to the so-called Decentralized Clinical Trial (DCT) approach. Pfizer's 2011 REMOTE trial is considered to be the first DCT. In the REMOTE trial, all study visits were Web-based, but because of inadequate Web environment and low patient enrollment, the trial was terminated. The guidance issued by regulatory authorities regarding COVID-19 states that the implementation of "direct to patient shipping", "telemedicine", and "home health visit" should be considered in clinical trials outside study sites. However, the regulatory requirements and healthcare environment as well as the obstacles for implementation of those three items vary by country. In addition, most clinical trials require a combination of those items, and few trials can be conducted with a single item (e.g., telemedicine). On the other hand, despite issuance of guidance for continuing clinical trials by regulatory authorities in EU, the US, and Japan, the environment for implementation tends to vary by country. In Japan, there are very few cases in which actual implementation is possible. Clearly, a framework is needed to continue clinical trials outside study sites similarly to DCTs, and to comprehensively discuss and propose solutions. From the patients' perspective, conducting clinical trials outside study sites should be continued even after the COVID-19 pandemic has been contained. Pfizer started a Phase 2 study for stasis dermatitis in the US in 2020, which is fully conducted outside study sites. Pfizer Japan is currently preparing to start several studies outside study sites using the above-mentioned items. We would like to discuss issues and prospects for future development in Japan and the world.

Keywords : Decentralized Clinical Trial (DCT), COVID-19, Direct to patient shipping, Telemedicine, Home Health Visit

Bringing trials closer to the patient through digital capabilities and enabling services such as telemedicine, mobile nursing and direct to patient IMP delivery

Angeli Dogra, Frederique Goulart

Novartis Pharma AG

Recruitment and retention have historically been a challenge in clinical trial execution. Only 2% of the U.S. population and 6% of the EU population have participated in clinical trials, and the dropout rate is about 30%. For those few who do participate, they are faced with high frequency and time consuming visit schedules. To address this, we are reimagining our clinical development operations through flexible trial models where some visits are conducted on site and some visits are conducted remotely to increase participation and engagement in our trials. Our Patient Centric Remote Trials program leverages digital solutions and enabling services such as telemedicine, mobile nursing and direct to patient Investigational Medicinal Product delivery to allow elements of clinical trials to be conducted at a participant's home or local physician's office, rather than at a central trial site such as a large hospital.

To implement flexible trial models Novartis is taking a stepwise approach to build operational experience in order to support our diverse portfolio; beginning with long-term follow-up studies and building towards phase 2 and 3 trials. In doing so, we determine which trial execution processes are impacted and may require adaptation. Moreover, engagement with global health authorities is required to continue to encourage acceptance of data collected from location flexible trials. In parallel, Novartis is committed to including the patient and site perspectives as we create new models for trial execution. Flexible trial models that can be applied to any research site, allow patients and their caregivers to better-fit participation in clinical trials into their daily lives. By combining digital technologies and the opportunity to participate remotely, we seek to reduce the burden for patients, to improve enrollment and retention, and open up access to trials for previously underserved patient populations.

Keywords : Decentralized trials, telemedicine, mobile nursing

Remote education and telemedicine in NTU college of medicine and hospital during COVID-19 pandemics

Lu-Cheng Kuo

Department of Internal Medicine, National Taiwan University College of Medicine

As a tertiary teaching medical center, NTU Hospital has many residents and medical students. Before the COVID-19 pandemics, remote education and platform were already established for the rotating courses within hospital wards and between branch hospitals. As COVID-19 pandemics, the pattern of conference changed. Huge meetings are split into small groups in individual wards to avoid close contacts of numerous persons. Sites are connected by real-time network conference. The classes of Medical College were also conducted by remote education, especially for the students during quarantine. Teachers make pre-recorded lectures or had on-line real-time teleconference with the students. Fortunately, there was no outbreak within Taiwan. Therefore, most classes were operated as before and only a few students joined the on-line teleconference. As the Law, telemedicine was not widely adopted in Taiwan in the past. But the needs of telemedicine increased rapidly during the pandemics. National Health Insurance supported telemedicine. Several modalities of telecommunication were introduced for the care of the quarantined patient.

Keywords : remote education, telemedicine, COVID-19 pandemics



Lu-Cheng Kuo

Telemedicine in the Philippines

Digital transformation in the era of COVID-19

Vittoria Vanessa Velasquez

St. Luke's Medical Center
St. Luke's Medical Center College of Medicine

Filipino clinicians have tapped into the essence of telemedicine way before the occurrence of this pandemic out of necessity. The background of clinicians, who unknowingly have been using informal platforms like SMS, e-mail, chat and file sharing apps and other similar platforms as a response to underserved patients who lives in geographically isolated and disadvantaged areas, which at the same time deal with illness and poor socioeconomic status, and are further complicated by evident gaps in the Philippine health care system. The various telemedicine channels and platforms were utilized to augment communication not only for patients, but also between colleagues, more so to complement the health care process across different levels and sectors. Furthermore, as the information and communication technology develops in Medicine, the demand for more formal platforms were steadily increasing in the last couple of years. Until the COVID-19 pandemic abruptly pushed the physicians and patients to the adapt overnight — social networking apps became an instant telemedicine tool for most Filipinos. Approximately 73 million internet users are in the Philippines, and facebook is the most common accessible platform used by Filipinos (95-96% users). However, using social networking apps has its major downside — security and lack of interoperability to more formal applications. Because of this instant digital transformation, various branches of the Philippine Government led by the Department of Health (DOH) convened and issued a national guideline on the use of Telemedicine as response to the COVID-19 pandemic. Subsequently, webinars on proper telemedicine usage became indispensable. Before long, multiple local start-up companies joined the bandwagon in developing “safer” telemedicine applications. This pandemic not only brought unprecedented change in healthcare in the country, but also the Filipino's health seeking culture.

Keywords : Telemedicine, Digital Transformation, Philippine healthcare, Telehealth, Social networking



Vittoria Vanessa Velasquez

Telemedicine in medical education at INCMNSZ

Virtual Medical Education

Miguel A. Tanimoto

National Institute of Medical Sciences and Nutrition Salvador Zubiran (INCMNSZ), Mexico City

Background

Teleconferencing in medical education has advantages including savings in terms of travel costs and time. The cause of telemedicine implementation failures is similar to that of other technology implementations. The lack of identification of the risks in telemedicine implementation leads to failure. Before the Sars-Cov2 pandemic, Telemedicine has a poor implementation record and a highly patchy adoption record in Mexico.

Objectives

The aim of this study was to describe the Telemedicine activities in education at the “INCMNSZ”.

Methods

Since 2013 we start conferences with TEMDEC from Kyushu U in Endoscopy between Japan key opinion leaders and Mexican residents. In 2019 we create the Telepresence Center at INCMNSZ and during the Sars-Cov2 pandemic more than 160 lectures for the residents from several medical and surgical subspecialties.

Results

More than 200 conferences in medical education.

Conclusions

One of the main reasons of Tele-education is that it affords opportunities which were previously unavailable for residents or medical students because of geographic location, travel imitations, economics or personal choice to avail them of medical knowledge personalized for them.

Keywords : Virtual, Telemedicine, Medical Education, Telepresence Center, Tele education



Miguel A. Tanimoto

Build, collaborate and disseminate knowledge networks

How to construct, sustain and pave the evolution of health collaborative networks supported by regional and national research and education networks

Luiz Ary Messina

RNP Rede Nacional de Ensino e Pesquisa
ABTms Associação Brasileira de Telemedicina e Telessaúde

After more than 20 years of successful experiences in the implementation and practice of Telemedicine in Brazil and measures of its precision, both in teaching and in remote collaborative research and with the support of teleassistance, even if restricted by the current resolution of CRM 1643/2002 pre-pandemic between consultant and applicant doctors, with or without the presence of the local patient, the pandemic came to open up the practicality and usefulness of Telemedicine. And it is no longer possible to imagine the practice of medicine, and all areas of health, without this additional technological facility, always maintaining the indispensable professional ethics and the safety of the patient and health professionals. The Brazilian Telemedicine University Network RUTE with its 139 University and Teaching Hospitals members and the associated 60 Special Interest Groups in health specialties and professions, ca. 3 scientific sessions everyday, has proved its importance during these 14 years of existence. The collaborative model has also motivated the creation of NutriSSAN the collaborative network of sovereignty and security food and nutrition, today already with 15 SIGs.

Keywords : Telemedicine, Telehealth, Digital Health, Collaborative Networks, Sustainable Development Goals



Luiz Ary Messina

Remote medical education: Application in COVID-19 era

○ Kuriko Kudo, Tomohiko Moriyama and Shuji Shimizu

International Medical Department, Kyushu University Hospital

Telemedicine Development Center of Asia (TEMDEC) have proceeded remote medical education both internationally and domestically since 2002. We had a dynamic change in style around 2010, where activity spread to the smaller hospitals installed with commercial network. Now, the locked-down situation of COVID-19 has additionally dynamically changed the conference style, from institutional connection to individual connection. With user-friendly tools, individuals participated in increasing number of programs such as research meetings, case conferences and online congress etc. In this presentation, we will show the history of our activities in international telemedicine, and share recent topics and upcoming events.

Keywords : Medical staff education, Distant learning, Internet and communication technology, COVID-19, Telemedicine

Kuriko Kudo, Ph.D., has worked at the Telemedicine Development Center of Asia (TEMDEC) at Kyushu University Hospital since August 2011. She currently works as an assistant professor and chief technical officer (CTO) of TEMDEC. She leads research for telemedicine engineering training as a Steering Committee member of the Asia Pacific Advanced Network (APAN) Medical Working Group. She graduated from Kyushu University with a doctorate in design, with digital archives using 3D computer graphics based on physical measurement of motion, shape, lighting, and the spectral reflectance of materials.



Kuriko Kudo

Application of telemedicine to support tobacco cessation

Ikuo Tofukuji, PhD

Takasaki University of Health and Welfare, Takasaki, Gunma

The research and development of telemedicine in Japan began in the 1970s. In the 1990s, some practical telepathology systems were developed and applied to intraoperative quick pathology diagnosis. Telepathology application for quick diagnosis was approved for the payment of medical insurance in 2000. Telemedicine application for patient care was released by the interpretation of Article 20 of the Physicians Act by the Ministry of Health and Welfare. Thus teleconsultation for patient care applies to medical care. In 2015, a notice from the Ministry of Health, Labour and Welfare (MHLW) activated applications for patients' online care. The application of online patient care was approved to pay medical insurance in 2018.

The application of medical insurance for tobacco cessation therapy was approved in 2006 based on the recognition that smoking is nicotine addiction. In 2020, the application of online patient care for tobacco cessation therapy was approved. In the standard tobacco cessation therapy program, five consultations were needed in 12 weeks. Online patient care is applicable for the second, third, and fourth consultations. In December 2020, an application of digital therapeutics was approved for payment of medical insurance by the MHLW.

Keywords : Tobacco cessation, telemedicine, online patient care, digital therapeutics

PhD	Niigata University, School of Natural Science
2006 – Present	Secretary general of JTTA
2004 – Present	Professor, Takasaki University of Health and Welfare
1976 – 2004	Olympus Optical Co., Ltd. (Tokyo, Japan)
	Developed products:
	•Electro-phoresis analyzer, Blood analyzers
	•Laboratory information systems、 Healthcare card systems
	•Telepathology system
1974 - 1976	Niigata University, School of Engineering (Nagaoka, Japan)
	Master of Engineering
1970 - 1974	Niigata University, Faculty of Engineering (Nagaoka, Japan)
	Bachelor of Engineering



Ikuo Tofukuji

Tobacco, alcohol, drug and digital therapeutics - The case of MoHW & MFDS in South Korea

Sean G. Kang

WELT Corporation,

‘Smoking is a Disease, Treatment is Cessation.’ This is a public service advertisement from the Ministry of Health and Welfare(MoHW) in Korea. Though the smoking rate is going down, 20% of Korean population are still smoking.

In 2015, Korean government raised tobacco tax. 73.7% tax is included in every cigarette pack, and that is ₩ 1,183B/year in total. Among this, ₩ 313B/year is marked as The National Health Promotion Fund, and ₩ 19B is directly used for tobacco cessation annually.

Meanwhile, the Ministry of Food and Drug Safety(MFDS) has been promoting digital healthcare since 2018. The medical use guidelines of AR/VR came out in 2018, and the medical use guidelines of AI were enacted in 2019. For this year, the guidelines for Digital therapeutics has been made along with WELT corp.

WELT corporation is the leading company of digital therapeutics in Korea and a member of the Digital Therapeutics Alliance(DTA). The company is preparing for the market launch in Korea by bridging Prescription Digital Therapeutics(PDT) pipelines that is licensed in other countries. For the successful launch of the pipeline, WELT is in close consultation with the Korea Association Against Drug Abuse and the Ministry of Food and Drug Safety(MFDS). This will be the first digital therapeutics approval in Korea. At the same time, WELT signed MOU with the Ministry of Health and Welfare (MoHW), and both parties are co-developing digital therapeutics for Alcohol use disorder (AUD).

In 2020, the Ministry of Health, Labour and Welfare(MHLW) of Japan approved nicotine addiction digital therapy. The year 2021 will be the best time to develop digital therapeutics for tobacco cessation in Korea, and WELT will help in the process.

Keywords : South Korea, Digital Therapeutics, Tobacco, Alcohol, Drug

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Co-founder & CEO

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2019 – Present Ministry of Health and Welfare, Advisory committee
2018 – Present Ministry of Food and Drug safety, Advisory committee
2017 – Present KFDA-ETRI, Smart Healthcare Advisory Committee
2016 – Present Co-founder & CEO, WELT Corp.
2014 – 2016 Medical Creative Leader, Samsung Electronics
2012 – 2014 Co-founder & CEO, Motiveapp
2011 – 2012 Korea Health Promotion Institute
2010 – 2011 Ministry of Health and Welfare, Bureau of Health Policy



Sean G. Kang

The use of digital therapeutics in smoking cessation: Current trends in the United States

Ravi S. Nunna, MD

Swedish Neuroscience Institute, Seattle, WA

Tobacco use remains a global problem in the 21st century. This substance abuse disorder is estimated to cause over 5 million preventable deaths annually worldwide. While health policy strategies and pharmacologic interventions have demonstrated limited effectiveness in mitigating rates of tobacco use, new tobacco products such as electronic cigarettes and “heat-not-burn” devices have contributed to an increasingly challenging landscape for clinicians in treating tobacco use disorder. These difficulties are further compounded by frequently insufficient training in the treatment of tobacco use disorder for primary-care physicians, as well as issues in delivery of care with many smokers not receiving assistance to quit.

While the optimal smoking cessation strategy is a combination of counseling and pharmacologic therapy, a 2015 study by the CDC revealed that only one-half of smokers received professional advice to quit, of which fewer than one-third used an evidence-based cessation treatment; overall, only 7.4% of smokers successfully quit. Major contributing factors to low intervention usage rates and subsequent quit rates in the United States include limited insurance coverage for tobacco cessation counseling and the inconvenience of frequent in-person counseling.

Advances in the biochemical assessment of tobacco consumption and digital therapeutic applications have been developed to overcome the limitations of historical tobacco dependence treatments. Recent studies have demonstrated that these technologies can be applied to create personalized treatment programs with more frequent interaction with patients, ultimately improving tobacco dependence treatment efficacy. Given the evolving landscape of digital therapeutics in smoking cessation in the US, we present a current overview of contemporary smoking cessation digital therapeutic platforms. In addition, we will seek to critically analyze corresponding clinical evidence and discuss future directions of this developing sector.

Keywords : digital therapeutic, DTX, smoking, cessation, application

Professional and Academic History

Complex/MIS Spine Fellowship – Dept. of Neurosurgery, Swedish Medical Center (Seattle, WA)	2020-present
· Fellowship Directors – Rod Oskouian, MD and Jens Chapman, MD	
Mehta Lab Research Fellowship - Dept. of Neurosurgery, Uni. of Illinois at Chicago (Chicago, IL)	2019-2020
· Translational and clinical investigations in spinal oncology and degenerative disease	
· Research Mentor – Ankit Mehta, MD	
Neurological Surgery Residency - Rush University Medical Center (Chicago, IL)	2015-2019
· Completed PGY1 - 4	
University of Cincinnati College of Medicine – Doctor of Medicine (Cincinnati, OH)	2011-2015
Miami University (Ohio) - Bachelor of Arts, Zoology (Oxford, OH)	2007-2011

Certifications and Examinations

USMLE Step 1: 240	2013
USMLE Step 2 CK: 240	2014
USMLE Step 2 CS: Pass	2014
USMLE Step 3: 231	2016
ABNS Primary Examination: 497	2019
IBM Professional Certification in Data Science	2020



Ravi S. Nunna

Clinical evidence of telemedicine and digital therapeutics for smoking cessation in Japan

Kohta Satake

Department of Respiratory Medicine, Japanese Red Cross Medical Center
CureApp Institute, CureApp, Inc.

Smoking is a big public health concern globally. A 12-week standardized smoking cessation program is available and covered in the public health insurance system in Japan. Recently, there are new therapeutic methods for smoking cessation, one is telemedicine, and the other is digital therapeutics.

Telemedicine (online medical care) is a medical examination method that uses video calls and chats on smartphones, PCs, and tablets to make reservations, interviews, medical examinations, prescriptions, and payments on the Internet. And, digital therapeutics, a subset of digital health, are evidence-based therapeutic interventions driven by high-quality software programs to prevent, manage, or treat a medical disorder or disease.

Both are driven by ICT technology, and it is often said that the smoking cessation program can be further evolved by utilizing these technologies. In my presentation, I will cover the overview of telemedicine and digital therapeutics and their clinical shreds of evidence in smoking cessation in Japan.

*Please disclose COI.

Kohta Satake is founder and shareholder of CureApp, inc.

Grants from Ministry of Economy, Trade and Industry, Ministry of Internal Affairs and Communications of, and New Energy and Industrial Technology Development Organization(NEDO)

Keywords : telemedicine, digital therapeutics, digital therapy, smoking cessation

Kohta Satake is co-founder and CEO of CureApp Inc., No.1 digital therapeutics company in Japan. He is a physician specialized in respiratory medicine and smoking cessation, in Japanese Red Cross Medical Center.

Having graduated and obtained Bachelor of Medicine from the Keio University School of Medicine in 2007, he engaged in clinical work at the Japanese Red Cross Society Medical Center, and was involved in the clinical field as a respiratory physician. In 2012, he went off to study abroad at overseas graduate schools gaining global experience in China and the United States. He completed his Masters of Business Administration (MBA) from the China Europe International Business School (CEIBS) as well as a Masters of Public Health from the John Hopkins University School of Public Health (MPH) in the United States. At Johns Hopkins, he has been engaged in medical informatics research, especially in digital therapeutics and its cost-effectiveness analysis. After returning back to Japan, he founded CureApp Inc. in 2014.

He is still engaged in clinical work at the hospital as well as academic activities as the chairman of SIG Digital Therapeutics and Digital Therapy of Japanese Telemedicine and Telecare Association(JTTA) and the councilor of Japan Society for Tobacco Control. The digital therapeutic for nicotine addiction treatment (CureApp SC) was approved by the regulatory affairs in August 2020 and covered by public health insurance in December of the same year as the first case digital therapeutic product.



Kohta Satake

Updates in hypertension

Prof. Stefano Omboni, MD

Italian Institute of Telemedicine, Italy

Scientific Department of Cardiology, Sechenov First Moscow State Medical University,
Moscow, Russian Federation

This presentation reviews the management of hypertension in 2020 and highlights the tools that telemedicine for better outcome in hypertensive patients

Prof. Stefano Omboni graduated with distinction in Medicine in 1988 and specialized in Cardiology in 1992 at the University of Milan. He is Director of the Italian Institute of Telemedicine and Professor of Cardiology at the Department of Cardiology of the First Moscow State Medical University. He has published original papers in the areas of blood pressure monitoring, telemonitoring, arterial hypertension, cardiovascular disease, telemedicine, clinical physiology, and pharmacology. He is member of the Blood Pressure Monitoring Guideline Writing Committee of the Italian and European Society of Hypertension, of the Italian, European and International Society of Hypertension, of the Italian and European Society of Cardiology, and of the International Society for Telemedicine and eHealth. He serves as member of the editorial board of several international journals. He is Scientific Coordinator of the TEMPLAR Project, a Pharmacy-based Italian Registry on ambulatory blood pressure telemonitoring, and of the VASOTENS Registry, an International Registry on ambulatory blood pressure and arterial stiffness telemonitoring.



Stefano Omboni

Updates in cardiac care and COVID-19

Daryna Chernikova, MD

Cardiology Department, City Hospital, Kramatorsk, Ukraine

This abstract highlights the results of the studies on acute care setting during the COVID-19 pandemic and the role of telemedicine in effective cardiac critical care delivery:

- TELE-ICU in the age of COVID-19: Built for this challenge
- Telehealth transformation: COVID-19 and the rise of virtual care
- A web- and App-based connected care solution for COVID-19 in- and outpatient care: Qualitative study and application development
- COVID-19 and disruptive modifications to cardiac critical care delivery
- COVID-19 transforms health care through telemedicine: Evidence from the field.



Daryna Chernikova

Updates in heart failure

Mihai Trofenciuc, MD, PhD

Vasile Goldis Western University of Arad, Romania

This presentation reviews the main key studies in the category Heart Failure, studies that can re-define current medical practice. The new EMPEROR-Reduced and DAPA-CKD studies highlight the value of SGLT2 inhibitors in patients with heart failure with reduced ejection fraction (HFrEF), and in patients with chronic kidney disease, with or without diabetes. The EXPLORER-HCM trial examined a novel pharmacologic approach to management of obstructive hypertrophic cardiomyopathy. New data is available on sacubitril/valsartan in heart failure with preserved ejection fraction (HFpEF) from the PARALLAX trial, as well as results from the BRACE-CORONA trial on the safety of renin-angiotensin system antagonists in patients with mild to moderate COVID-19.



Mihai Trofenciuc

General Session Oral

IG01 Telemedicine in the age of COVID-19

Chair **Shuji Shimizu**

Kyushu University Hospital, International Medical Department

IG01-1 Inpatient telemedicine use during COVID-19

○Sue Dhamija, Bradley Geyer, Monica Sethi, Tomas Ricalde, Gunjan Dalal
Asra Khan, Rajendra Suvarna

Multicare Inpatient Specialists at Auburn Medical Center

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IG01-2 Investigation of the changes in physical fitness between before and after the lifting of the stay-at-home order by using remote evaluation

○Saki Yamamoto, Atsuki Kanayama, Ryoga Ueba, Mio Kobayashi, Akira Iwata

Osaka Prefecture University

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IG01-3 Optimizing access to care during COVID-19

How telehealth solutions have played a key role during the global pandemic

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Inpatient telemedicine use during COVID-19

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Rajendra Suvarna

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PURPOSE: During the COVID-19 pandemic, our hospitalist group was short staffed without sufficient notice as some physicians were tested to rule out COVID-19 infection. During this time, hospitalists could perform work but were quarantined at home for 2-4 days pending test results. We aimed to explore the suitability & feasibility of a telemedicine service line for our group & understand its limitations in a pilot study.

METHOD: 4 rounding hospitalists performed 10 remote (n=40) & 10 telepresenter encounters each (n=40) on acutely admitted patients at Multicare Auburn Medical Center, a community hospital in Washington State. Each remote hospitalist partnered with a telepresenter who is also a hospitalist in our group. The telepresenter mobilizes the 2-way audio-visual technology port into the patient room & performs a physical exam. Remote hospitalists situated themselves in our hospitalist office for the this pilot study. We qualitatively interviewed all 4 rounding hospitalists individually & conducted content analysis of the interviews to understand their experience focusing on four key areas of interest: remote experience, telepresenter experience, patient experience, & limitations.

RESULTS: Hospitalists were satisfied with their ability to evaluate & communicate with patients using telemedicine. They felt confident knowing that the physical exam was performed by a hospitalist colleague, a telepresenter. Mean duration per patient encounter was 10.5 minutes. The 2-way audio-visual experience was seamless. As noted by our physicians, patients found the encounter to be positive & enjoyed continuity of care. Limitations include the rapid response & late call workflow for which back-up systems will need to be implemented.

DISCUSSION: Our hospitalists found Telemedicine use to be feasible, rapidly deployable, & cost effective for inpatient rounding. We plan to create a 5-hour voluntary moonlighting telepresenter shift to support remote telemedicine rounding.

Keywords : Acute medicine, Hospitalist, Telemedicine, Qualitative Study

Investigation of the changes in physical fitness between before and after the lifting of the stay-at-home order by using remote evaluation

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[Purpose] With the stay-at-home order (SHO) following the spread of COVID-19, the degree of physical activity has been reduced worldwide and physical fitness has decreased accordingly. Therefore, recovering physical fitness after lifting the SHO is a social need. Off-line measurements were performed to accurately estimate physical fitness. However, the same process is difficult under the current situation. This study aimed to elucidate the changes in physical fitness after increased activity by using an online measurement system.

[Method] The participants were 24 college students (mean age, 19.5 ± 0.9 years) who declared that their activity level during the SHO was less than half of that before the SHO. We assessed their physical performance (sit-to-stand time) and muscle strength (knee extension) by using an online meeting system during SHO and 2 months after the lifting of the SHO. Additionally, participants wore the activity monitor (watch type) to count the number of steps (NS). The results were analyzed using by paired t-test.

[Results] NS was significantly increased (from 3200 steps to 6000 steps) after the lifting of the SHO. Muscle strength also improved significantly with the increase in NS. On the other hand, sit-to-stand time did not change.

[Discussion] As the degree of activity increased, muscle strength improved significantly in healthy young people, but physical performance did not change. The time for recovery or increased activity may be inadequate for improving physical performance. Additionally, we were able to measure muscle strength and physical performance online.

Conflicts of Interest: There are no applicable conflicts of interest to disclose.

Keywords : activity, physical fitness, online measurements, stay-at-home order, COVID-19

IGO1-3

Optimizing access to care during COVID-19 How telehealth solutions have played a key role during the global pandemic

○ Simon Marshall

International SOS

The utilization and importance of telehealth grew substantially in 2020 as the COVID-19 pandemic emerged. Adoption rates grew dramatically in health systems around the world, with unprecedented rates of growth. Health professionals, patients, regulators, payers and multi-national organizations all embraced the opportunity and transformed the industry. The benefits across a wide range of use cases were clear – whether accessing primary care during a lockdown in metropolitan locations, managing the health of workers in remote locations, or providing clinical escalation pathways and remote specialist support to isolated populations. While telehealth solutions are diverse around the world, and unique to the variety of use cases, the outputs were similar during the COVID-19 pandemic – improved access to care, better clinical outcomes, mitigated risk and reduced costs, and optimized patient experience.

Keywords : telehealth, COVID-19, global, remote

IGO1-4

COVID -19 physical distancing telemedicine/ Virtual care connecting people COVID-19 distancing telemedicine connecting people

○ Emmanuel Abara

Northern Ontario School of Medicine

Purpose

On March 11,2020, the World Health Organization (WHO) declared COVID-19 a global pandemic. “Physical distancing” as one of the strategies to contain the virus made Virtual Health Care ‘centre-stage’ supported by approval of remuneration codes for telephone consultation and public telemedicine networks in addition to Ontario Health (OTN). Our experience at an Office Urology practice between 11/03/2020 and 21/07/2020 is presented

Methods:

A total of 633 patients were provided urologic care. These include consultation for new diagnoses, follow up for cancer surgery, surveillance, counseling, health education, supportive and screening for COVID-19. .Patients had options of Telephone (Audio) or Tele-Video (Audio+ Video) consultation. Workflow in the office was configured to allow staff to work from home. Scheduling modification, use of our electronic health records (EMR) and Data base were in place

Results:

: Out of 633 patients, 630 (99.5%) were seen through a virtual platform and 3 (0.5%) ‘face-to-face’ for various urological conditions Male were 568 (90%) and female 65(10%) Age distribution 8 days to 92 years. 346 people (308 male) and 38 (female) used telephone (audio) alone; and 284 people (260 male) and 24 (female) used audio + video- ‘e-visit at OTN hub’. For the 346 ‘Audio’ only users ,176 (51.0%) were rural dwellers and 170(49.0%) were urban. Among the 284 Audio + Video’ users 160 (56.0%) were urban dwellers and 124 (44.0%) were rural. Younger age group used the video platform more. Appointments were 10 to 30 minutes. In 20 of 284 (7.0%) ‘Audio+ Video’ users session was completed by telephone. Limitations of our study include solo urologist, restricted practice; small numbers; evaluative process required

Conclusion:

COVID-19 pandemic has been a catalyst for the adoption of Virtual health care. We achieved > 99% adoption rate by new and existing patients. Collaborative studies necessary for increased adoption

Keywords : COVID-19, Distancing, Telemedicine, Connecting, People

IGO1-5

Can an AI supported, self-assessment tool raise standards of eHealth and telemedicine services that are rapidly developing under COVID-19 emergency?

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It is understandable that remote health services are now being developed in a state of emergency. However, it is crucial that the standards within which these services operate are a matter of common interests, objectives and levels of importance for all stakeholders involved in the development as well as the recipients or users.

Namely, we believe that it is necessary to establish and maintain at least basic quality standards of services in these conditions. Furthermore, even after the pandemic, the need to integrate remote health into health and social services will remain a priority.

Therefore we explore whether a multi-criteria AI supported, self assessment tools can raise standards of eHealth and Telemedicine services that are rapidly developing under COVID-19 emergency.

One of the models we are researching is the INTERNATIONAL CODE OF PRACTICE FOR TELEHEALTH SERVICES, which is a multi-criteria tool for standardizing remote health services. It has been developed by Telehealth Quality Group (TQG), its founders Malcolm Fisk and Drago Rudel. TQG is continuing to develop within the ISfTeH with support of Friederic Lievens and other experts also within the ISfTeH Standards and Accreditation Working Group.

We believe that distance health is no longer just an alternative form of health care, so the development of standards, accreditations and regulations must also be included in the national priorities. These will ensure not only technological quality, but equally important quality of service.

Keywords : Artificial Intelligence, Self-assessment tools, Standards of services, Telemedicine and eHealth, COVID-19

IGO2-1

Our efforts to spread tele-intensive care for critically ill patients in Japan

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T-ICU, Co., Ltd

The tele-ICU has been started in the US 20 years ago to fill up the shortage of intensivists. T-ICU Co., Ltd. was the first private company in Japan providing tele-ICU services since 2017. We will report on the current situation of the tele-ICU in Japan and our company's efforts in this regard. In Japan, only 0.5% of all doctors are recognized as intensivists by Japanese Society of Intensive Care Medicine, and 70% of all the ICUs do not have intensivists. We were the first in Japan to introduce a remote ICU service and are working to resolve the issue.

In Japan, online diagnosis is gradually being approved for insurance purposes, but the tele-ICU has not yet been approved. However, tele-ICU has been approved for a limited time as a countermeasure for COVID-19. It is expected to be covered by insurance in near future.

One of the problems with the introduction of this system is the protection of personal information. Many hospitals don't allow access to the hospital's internal network from outside. This could be the emotional reason rather than systemic security. Since we cannot freely access medical information, we currently operate the system as the reactive care model, receiving limited disclosure only when necessary.

Although tele-ICU has already been proven to improve the quality of medical care, it is not easy to expand in Japan. The reason is that the effectiveness of intensivists is not well recognized. And, the lack of insurance coverage means that the cost of intensive care is simply an increase in hospital management.

First of all, it is difficult to solve these problems with the reactive care model. There is no way to deal with the problems that can be solved by an intensivist, as long as the hospital does not contact us with the same awareness. The continuous model is required to solve these issues. And if it is not covered by insurance, it is necessary to show evidences in Japan and cooperate with the national and local governments.

Keywords : Tele-ICU, intensivist, Japanese insurance coverage

Why Japanese physicians are not practicing telemedicine in the COVID-19 era?

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- 2) Kyushu University Hospital

[Purpose] Identify awareness of telemedicine among Japanese doctors who are not currently using it, and explain the reasons which hinder its growth. [Method] Participatory design strategy was used with online structured interviews. The survey was conducted with 23 doctors at various ages and specialties. [Result] 16(69%) participants were somewhat aware of telemedicine. 10(44%) of them were interested in it. Only 3(13%) participants satisfied with the amount of information available on it. 12(39%) of them had no detailed information on the service. 8(32%) participants wanted to know about telemedicine guidelines and standards. To raise awareness of it, 7(31%) participants called for implementation of telemedicine curricula into undergraduate medical education. 13(29%) of them indicated that inability to perform accurate physical exam is the main reason to not use it. The majority stated the difficulty in performing endoscopic exam, and diagnosing oral cavity via the telemedicine devices. About the best practice for telemedicine, 8(30%) participants indicated that it is a good tool to conduct remote follow up meetings with the family members who are unable to be with their patient at the hospital. For telemedicine practice, 14(32%) of them needed to improve their ICT skills. The doctors' insights for the service growth are; a) telemedicine will not spread in Japan unless it is mandated by policy or other means, b) hospitals must be well prepared for telemedicine, c) patients are not ready for telemedicine, so they must be educated about it, d) setting strict rules to avoid telemedicine crimes, and e) about the issue of low practice fee, the payments for telemedicine are better not covered by the health insurance, and allow doctors to set the prices freely. [Discussion] Doctors will start demanding more use of telemedicine that is when the service meets their needs and goals. [Conflicts of Interest] There are no applicable items for disclosure of conflicts of interest.

Keywords : Telemedicine, COVID-19, Service Design, Physicians' Needs, Participatory Design

The effect of telemedicine in perinatal care of remote islands in Japan

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Naze Tokushukai Hospital

[Purpose] Amami Islands are located between Kagoshima and Okinawa prefectures. They are remote islands with the population of about 120,000. Unlike the mainland where birth rate is decreasing, Amami islands keep a high birth rate, however the perinatal care system is not as good as that of the mainland's due to the lack of medical staffs and facilities. The patients who have any symptoms such as severe threatened premature labor, have to be transferred to and treated in the mainland. But it is sometimes difficult to transfer the patients to mainlands due to the bad weather condition and long distance. Therefore, it is definitely important to detect patients' problems quickly and treat them properly. [Method] To solve these problems, we introduced a portable mobile cardiotocogram (iCTG) which is a fetal heart beat and uterine contraction monitor to reduce the number of hospital visits for pregnant women and to detect and treat an abnormality as early as possible. [Result] Since 2011, We have used iCTG and saved nearly 150 pregnant women and their fetuses. Among them, we present three typical cases. [Discussion] We hope that this system will constantly stabilize the perinatal care in remote islands such as Amami Islands. [Conflicts of Interest] There are no applicable items for disclosure of conflicts of interest.

Keywords : mobile cardiotocogram, iCTG, remote island, Perinatal care

Reliability of remote evaluation of muscle strength and angular velocity of the lower limb

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Osaka Prefecture University

[Purpose] Accurate evaluation of physical fitness, such as muscle strength and angular velocity, is necessary for rehabilitation. Although physical fitness has been evaluated online recently, its reliability has not been clearly elucidated. Therefore, the purpose of this study was to examine the reliability of online measurements of muscle strength and angular velocity.

[Methods] The subjects were 11 young adults (25.5 years). The knee extension strength (KS), ankle plantarflexion strength (AS), knee extension angular velocity (KV), and ankle plantarflexion angular velocity (AV) were measured twice online at the subjects' homes and once off-line at the laboratory, for three times on different days. During the online evaluation, the assessor instructed the subjects on how to perform these tests and how to measure the results themselves through a video conferencing platform (*Zoom*). The intraclass correlation coefficient ($ICC_{1,1}$; between online measurements, $ICC_{3,1}$; between online and off-line measurements) and Bland-Altman analysis were used.

[Results] The $ICC_{1,1}$ was KS: 0.93, AS: 0.95, KV: 0.82, and AV: 0.91. There was no significant systematic bias between the online measurements. The $ICC_{3,1}$ was KS: 0.93, AS: 0.92, and KV: 0.92, AV: 0.66. A significant fixed bias resulting in the underestimation of all online measurements, except for AV, was observed.

[Discussion] A good reliability was observed in the online measurement of muscle strength and angular velocity. However, because the measurement values in online shift to lower than that in off-line, care must be taken in the interpretation of the results.

[Conflicts of Interest] No conflicts of interest to disclose.

Keywords : remote evaluation, online measurement, muscle strength, angular velocity, physical fitness

The utility of using the postal delivery service to deliver small wireless ECG monitoring devices to patients with atrial fibrillation

○ Mitsuru Takami, Koji Fukuzawa, Kunihiko Kiuchi, Makoto Takemoto, Jun Sakai, Toshihiro Nakamura, Atsuke Yatomi, Yusuke Sonoda, Hiroyuki Takahara, Kazutaka Nakasone, Kyoko Yamamoto, Yuya Suzuki, Kenichi Tani, Ken-ichi Hirata

Kobe University Hospital

Background: Conventional Holter monitors are typically cumbersome, uncomfortable, and requires patients to visit the hospital several times.

Purpose: We evaluated the utility of using the postal delivery service to deliver a patch-type ECG monitoring device (Duranta [ZAIKEN Co., Ltd.]) to detect the atrial fibrillation (AF) recurrence in patients who have undergone catheter ablation.

Methods & Results: The Duranta was sent to the patient's home by post. The patients applied it to their chests themselves, and their ECG was monitored for one to seven days. The data was subsequently sent to the hospital via cloud server. The doctor in the hospital could check the real time ECG data. Then, the patients returned the devices to the hospital by post (Figure). The Duranta was used in 10 patients (age 66 ± 9). The ECG data was successfully sent to the hospital via cloud server in all patients, and revealed that there was AF recurrence in 2 out of the 10 patients.

Conclusion: The use of the postal delivery system to deliver a small ECG device was useful and convenient in diagnosing arrhythmias without visiting a hospital. This ECG delivery system could be applicable to telemedicine and home medical care.

Keywords : ECG, atrial fibrillation

Effectiveness of tinnitus therapy using a mobile application

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Introduction: Tinnitus treatment is a challenge for modern medicine due to the difficulty in establishing etiology. For now, it is impossible to choose one therapeutic path. A large number of people with tinnitus use sound therapy to reduce the annoyance of tinnitus. Patients are becoming more and more willing to take advantage of unconventional treatments and innovate approaches to the problem. Growing interest was also noticed by the creators of applications for mobile devices, therefore, we can see more and more tools for medical use.

Aim: The aim of the research was to check the possibility and efficiency of the application installed on a mobile phone, which may be useful in the treatment of tinnitus.

Material: We recruited 52 people on the study, aged 19-65. These patients were hospitalized due to tinnitus at the Institute of Physiology and Pathology of Hearing.

Method: The ReSound Relief phone application was used for the research. It was created to help patients divert attention from tinnitus and support the process of habituation. ReSound Relief uses the principles of sound therapy and relaxation, breathing and meditation exercises.

Result: Due to the subjective nature of the problem, the effectiveness of the application was assessed on the basis of the results of standardized questionnaires. We used the Tinnitus Functional Index and Tinnitus Handicap Inventory questionnaires to assess the tinnitus burden. Detailed results will be presented at the conference.

Conclusion: The possibility of using mobile applications in everyday practice is a relatively new field of research in the field of audiology. Current data suggests their effectiveness in various areas related to hearing.

Keywords : mobile applications, tinnitus, sound therapy

Teleaudiology as a helpful tool in diagnosis, treatment and rehabilitation in COVID-19

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Nowadays, due to transmission risk of SARS-CoV-2, it is incredibly important to limit the number of traditional consultations and surgeries to the minimum. However, it is also a great challenge to provide high-quality health care to patients. Children and adults with hearing impairments and other ENT disorders often need to be diagnosed as early as possible, because late or inaccurate diagnosis might have negative consequences.

The aim of this presentation is to share experience of using telemedical solutions in COVID-19 in the frame of the National Network of Teleaudiology.

The surgery itself or the undertaken treatment is not sufficient to improve the patients' quality of life. Effective rehabilitation and regular check-ups with a specialist are also necessary. It is particularly important in patients with implantable hearing devices and hearing aids (fitting and checking of the speech processor the hearing aid). Thus the patient needs to travel to the clinic at least a few times, which generates additional costs and increases transmission risk of the virus. The world's first National Network of Teleaudiology gives patients the opportunity to reduce the number of visits to the minimum; it is important in the situation of pandemic and helps to minimize transmission risk of SARS-CoV-2. Nowadays, all telesolutions are helpful and necessary. Currently, patients can choose from 19 centers within the National Network of Teleaudiology in major Polish cities, which means that patients from all over the country can choose the nearest facility to their home, and 8 centers abroad in three continents: in Ukraine, Belarus, Kyrgyzstan, Kazakhstan and Senegal.

To sum up, telemedicine in diagnosis, treatment and rehabilitation of the ENT disorders is great solution helping to minimize transmission risk of SARS-CoV-2 and simultaneously, provide high-quality care to patients. Currently during pandemic, the role of telemedicine, teleaudiology, telefitting cannot be underestimated.

Keywords : telemedicine, teleaudiology, e-Health, implantable hearing devices, hearing impairments

Deployment of head-mounted displays and virtual care platforms Delivering medical expertise and care remotely

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1) TeSo Telemedicine Solutions 2) Hippo Technologies

Telemedicine or virtual care is a specific application of ICT in healthcare. Virtual care is able to diagnose and triage patients and deliver specialist care remotely. Teleconsultation by remote specialists using head-worn tablets (Head-mounted Displays or HMDs) and Smart Glasses can provide a range of diagnostic possibilities and improve the delivery of healthcare. This technology provides faster, more efficient use of medical expertise and measurably improves patient outcomes. The success of using this technology is dependent on the people using it. Virtual care platforms bring a combination of global medical practice and next generation technologies to transcend conventional boundaries of distance, time and training to serve patients and those who care for them. The hands-free, voice-activated, head-worn tablets facilitate communication in real-time with remote colleagues, improving convenience, efficiency. Secure video conferencing, real-time chat allow provider-to-provider and provider-to-patient consultations, immediate access to EMRs, connecting wearable devices/sensors, and employment in a wide range of use cases such as in-home specialist consultations. Critical factors for successful implementation: quick to deploy, plug and play installation, remote set-up, ongoing support, easy to use, hands free with innovative voice controlled and activated technology, dust-proof, water resistant, rugged design. Also, they should be fully networked, compatible with Wi-Fi, Bluetooth, LTE and 5G for seamless integration with any hospital system, no matter the distance, and connect to any device remotely. Importantly, HMDs and virtual care platforms need to be safe and secure, state-of-the-art encrypted and advanced security features to be compliant with HIPAA and GDPR standards and requirements. Ideally, open APIs for virtual care platforms will allow a range of third-party applications to integrate into various devices, systems and platforms used in healthcare.

Keywords : Wearables, Head-mounted Displays, Virtual Care Platforms, Telemedicine, Triage

Exploring the availability of oral images taken with a single lens reflex camera for automated diagnosis of oral mucosal disease

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Early detection of oral cancer is important because the survival rate is significantly decreased as the cancer progresses. Oral cancer is a rare form of cancer that can be observed non-invasively, however it is difficult to differentiate from precancerous lesions and stomatitis, and is hard to diagnose until it has progressed except for few oral cancer specialists. Thus, a system should be built to screen patients at the dental clinic where most of them attend and have them diagnosed by the specialist. Recently, deep learning has made many achievements in wide fields including medical image detection. In the field of oral images, previous studies used deep learning algorithm with hyperspectral images (Jeyaraj and Nadar, 2019) and images by optical instruments (Morikawa et al., 2019) and achieved to some extent.

However, as the images widely taken in dental clinics are photos taken with a single lens reflex camera, those researches even miss the patients who cannot access to the dentists with the special equipment. We collected about 150,000 images from patients visited The University of Tokyo hospital diagnosed oral mucosal disease and created dataset for deep learning. These images have various noise problems; taken under un-controlled lighting condition, camera technique, and the diverse coverage while general image analysis is formatted and under control. In this study, we suggest how to reduce these noises efficiently while creating dataset and show the possibility of common oral images for automated screening.

Keywords : image diagnosis, oral mucosal disease, deep learning, telediagnosis, screening

The importance of standards for quality Telemedicine and eHealth services in COVID-19 pandemics

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SLOVENIAN Medical Informatics Association (SIMIA)

To ensure quality of Telemedicine and eHealth services the use of standards is indispensable. There are only a few standards of services in the field of Telemedicine and eHealth, so standardisation institutions and user associations are joining efforts with various stakeholders to work together in the development of such standards. The already existing standards are only partially implemented in health strategies and are in need of greater enforcement.

In the light of the current COVID-19 pandemic, vulnerable groups such as patients, elderly adults, and chronic patients are even more exposed to remote medical treatment environments, where procedures and service protocols would require standardization. Also, the lack of standardised Telemedical and eHealth services imply that medical professionals are working in a more demanding work environment.

In this paper, we will present the importance of standards in the field of distance health services and some examples of standards relating to eHealth and Telemedicine services in European and global practice. We will mention the definition of remote health service, related needs of elderly population and the benefits of standardisation of eHealth and Telemedicine services for individuals as well as the society and medical practice in general in the light of COVID-19 situation.

Keywords : COVID-19, standards, public health, telemedicine, eHealth

Cybersecurity and eHealth Telemedicine facilitating patient care

○ Dirk Peek

TeSo Telemedicine Solutions

Last couple of years there is a tremendous investment in medical devices, cloud services, ICT-infrastructure systems for the Healthcare industry. This implicates big changes in our care landscape. Current traditional Healthcare systems will be very different in the future compared as we now know it. There is a trend of keeping the patient safe at home with domotica, homecare devices, fall-prevention, Telemedicine, Telehealth services Virtual care platforms. Instead of "Doctor centered medicine" there will be a transition to "Patient centered medicine" : the patient can see you now. This asks for changes in the workflow of healthcare professionals. To facilitate this process there is a need for ICT-solutions and these solutions will become increasingly important. Connectivity, IoT Internet of Things, Big data analysis will expand the boundaries of our medical expertise and focus will be set on care and prevention within our healthcare system. Because of direct accessibility of patient-data (which needs to be protected and safe), easy access to communication devices will increase exponentially the quality of care and patient outcome. Telemedicine (for example Ambulance-Based Telemedicine systems or using Head Mounted Displays supervising wards or remote ER's by Telesupervision) facilitates communication between doctors, nurses, paramedics etc. But connectivity implicates possible threat data hacking. The healthcare industry is very critical on technological and potentially disruptive changes because of fear that interference with critical systems can bring damage to patients. Not investing in data security can also potentially cause damage to patients if private data is stolen. In my opinion also the patient itself should have a certain responsibility protecting his or her data and must be aware of the dangers of social media. Diseases etc. are sometimes shared on social media which potentially can do damage.

Keywords : ICT-infrastructures, Virtual care platforms, Ambulance-based Telemedicine systems, IoT, data security

IGO4-5

Quadruple change Nurturing digital healthcare transformation agents in digital era

○ Dr. Dina Ziadlou

ISfTeH

This is a qualitative exploratory study to explore the healthcare strategies that healthcare leaders need to adopt for nurturing the digital healthcare transformation agents based on Quadruple change. The author in this study has presented the new term called quadruple change, as a framework for delivering high-value digital transformation in organizations. The quadruple change consists of technical, organizational, social, and global change during digital transformation. The literature review revealed that for successful digital transformation, organizations need to empower employees, engage them in the process of change, and develop the culture of transformation in the dynamic environment. Toward this achievement, cultivating transformation agents based on quadruple change is one of the significant steps. This study utilized semi-structured interviews with open-ended questions through a virtual video conference among ten digital transformation leaders who had vast experience in digital transformation and leadership to obtain information-rich responses. The study findings identified seven factors are contributing to cultivating transformation agents in organizations, including vision creation, mindset change, knowledge improvement, innovation development, motivation increment, leadership support, and collaboration.

Keywords : digital transformation, quadruple change, transformation agent, healthcare leadership, knowledge development

IGO4-6

Telehealth regulatory frameworks in the GCC region Challenges & opportunities

○ El-Hassan, O.

ISfTeH

Healthcare providers in the GCC countries have embarked on an interesting journey to adopt Telehealth technologies in the last 10 years. However, very few experiments were reported in the literature. Healthcare regulators, have started to step in to this area to regulate in the last five years, This presentation will provide a comparative study on the different approaches that were adopted by Healthcare regulators in the GCC countries to regulate the exploitation of Telehealth technologies by Healthcare vendors and the impact of published policies and standards on the provision of these services.

The comparison will focus on the impact of the degree of complexity of the healthcare ecosystem, on the one hand, and the adopted policies and standards on the Telehealth adoption of public and private healthcare providers, on the other hand. As for policies and standards we will review certain aspects such as licensing processes and patient privacy and security requirements. The study will focus mainly on UAE and KSA markets at they showed better maturity from both healthcare services provision and regulatory perspective.

Keywords : Telehealth, Regualtory Frameworks, Digital Platforms, Patient Safety

Achieving SDG3 through telehealth-challenges

○ Azeema Fareed

COMSATS

Since the advances in IT technologies, a large number of TeleHealth projects have mushroomed all over the world including Pakistan. These projects encompass use of IT in the form of Telehealth, electronic health records, e-learning in health and mHealth, etc. Despite the benefits of Telehealth, COMSATS Telehealth during its 18 years of Telehealth service has faced a number of challenges and issues. These include the technical issues that include unavailability of connectivity, power breakdowns and unavailability of proper equipment. Sustainability, acceptability by patients and doctors, Lack of interest of the human resource, compensations to the doctors, other human resource and other operational issues have been faced by COMSATS during its Telehealth service.

Withdrawal

Tele-education for fetal ultrasound combined with remote video conferencing system, cloud web servicesour, and 3D featl ultrasound.

○ Motoyoshi Kawataki¹, Tokumasa Suemitsu², Maruyama Daisuke³

- 1) Kanagawa Children's medical Center
- 2) Kameda Medical Center Obstetrics and Gynecology
- 3) Showa University Fujigaoka Hospital Obstetrics and gynecolog

[Purpose] This is the first report of tele-seminar for fetal ultrasound combined with the Remote Video Conferencing System, the Cloud Web Services, and the Spatio-temporal image correlation (STIC), named Tele-Cloud Spatio-temporal image correlation (TC-STIC).

[Method] We have set the virtual personal computer, NoMachine on the Amazone Cloud Web Survices installed the STIC data and 4D view soft ware. The trainees can connect their own PCs with the Amazone Cloud and manipulate the NoMachine. They can get the skill of the fetal ultrasud of the CHD by following the instructor's PC and ask any questions through Zoom Remote Video Conferencing System.

[Result] We've held 24 seminars using TC-STIC in these six months. The number of trainees in one seminar was from 20 to 40. They came from not only domestic but also Taiwan and United States. The most common problem happened in the seminar was sudden stops of Nomchine during the operation, which were solved by the reduce of STIC data in one CHD case. And second common problem was poor quality of movie and sound through Zoom system, which was solved by the improvement of internet connection, especially change the wifi into wired LAN.

[Discussion] As TC-STIC is quite a new system, we all were not sure we could apply it for the tele seminar of fetal urtrasound. Although we have many troubles during 24 seminars in these six months, we have overcome them one by one thanks to the cooperation of IT engineer and supporters. We think TC-STIC is applicable and valuable enough for tele seminar of fetal ultrasound.

There is no conflict of interest.

Keywords : tele-seminar, Remote Video Conferencing System, Cloud Web Services, Spatio-temporal image correlation (STIC), fetal ultrasound

Assessment of the educational effectiveness of webinars using spatio-temporal image correlation (STIC) in fetal echocardiography: A questionnaire-based survey

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- 3) Hakodate Central General Hospital
- 4) Nara Medical University
- 5) Yokohama City University
- 6) Akita University
- 7) Showa University Fujigaoka Hospital
- 8) Showa university Koto Toyosu hospital
- 9) Nerima Hikarigaoka Hospital
- 10) Kanagawa Children's Medical Center

[Introduction] Effective screening for fetal congenital heart disease requires a high level of expertise and training with advanced ultrasound technology. Spatio-temporal image correlation (STIC) is a new approach used to clinically assess fetal hearts, that helps trainees to practice off-line. In 2020, we administered a questionnaire at an interactive web seminar on STIC and cloud computing service.

[Purpose] To investigate the problems and educational effectiveness of the STIC seminars.

[Method] We conducted a retrospective study of the participants in 4 seminars, between March and June 2020. A questionnaire with 25 questions was used to evaluate operation problems, and a post-seminar questionnaire of 6-7 questions was used to evaluate effectiveness.

[Result] Out of 307 participants, 42.0% (n=129) completed the questionnaire, 65.9% (n=85) were obstetrician, 11.6% (n=15) were neonatologist and the others were 22.5% (n=29). The post-graduate median year was 17 (1-45). Convenience motivated 56.6% (n=73) to attend the seminars. About 65.9% (n=85) attended from home. System maloperation, such as internet environment and the amount of STIC data, accounted for 62.1% (n=36/58) and 36.2% (n=21/58) of operating problems at the first and second seminars, respectively, and 19.7% (n=14/71) and 14.1% (n=10/71) at the third and fourth seminars, after these issues were resolved. Compared to the pretest, the average score of the posttest was 1.2 points higher.

[Discussion] These seminars are effective and help participants who cannot attend due to work, childcare, and transportation challenges. It will be possible to provide higher quality seminars by solving the Internet environment and system troubles.

[Conflicts of Interest] There are no applicable items for disclosure of conflicts of interest.

Keywords : teleseminar (webinar), cloud service, questionnaire survey, fetal echocardiography, spatio-temporal image correlation (STIC)

Nursing education of tomorrow - Trend towards digitization

○ Pirkko Kouri

Vice-President of ISfTeH

Digitalization and the consequent changes in the structures and functions of social and health services also place major demands on change in nursing education. Today digitization allows clients to have new opportunities to access various social and health care services regardless of the service provider, time or place. Use of digital services and tools motivate patients to self-care when applications are easy to use and enable communication between patient and caregiver. Secondary use of information is growing rapidly. The gathered information must be up-to-date also available to patients. The changes have an impact on nurse education and training. Along with diverse expertise, the professional competence of a nurse includes the ability to solve problems both when working alone and in multi-professional teams. The nurse must manage the key measures required in clinical nursing, diagnostic examinations and nursing assistance methods as part of the patient's overall care, and document with structurally uniform classifications. Thanks to the digitization in the learning, it is easy to organize the training of patient/client service situations and remote control using different channels (e.g. video, chat, e-mail, text messages, social media, mobile phone). Furthermore, in the learning environment, nurse student can also learn to utilize wireless, security-enhancing technology as part of nursing. In addition to these, the space has the prerequisites to teach the use of attendance and care robotics in nursing. In addition, the positive attitude learnt during education, plays an important role in digitalization skills also in future working life.

In conclusion, nurses should have basic ICT skills as well as the ability to think broadly about digital services. Digitization expertise should be well supported by educational institutions and organizations, and to promote the principles of lifelong learning.

Keywords :change in society, nursing education, digitization,

General Session Poster

IGP Poster presentations

Chair Ryoji Suzuki

Takasaki University of Health and Welfare

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Demonstration test of emergency transportation support system with information sharing function to medical institutions using 5G

Hiroki Matsumoto, ○ Fumika Aizawa

Maebashi Institute of Technology

In recent years, the frequency of emergency transportation has been high in Japan. To solve this problem, the authors have prototyped an support system for emergency patient transport that enables hospital personnel to obtain patient information in a short time, and have performed verification tests. Improving the quality of emergency transportation was a challenge for the prototype system. The purpose of this paper is to conduct a verification test assuming the use of 5G lines and to consider the further improvement of the quality of emergency transportation.

Keywords :

Demonstrative experiment and evaluation on prediction of weight shift for pregnant women

○ Hiroki Takakusagi¹, Toshihiro Ogasawara², Hiroki Matsumoto¹

1) Maebashi Institute of Technology

2) Iwate Prefectural Ofunato Hospital

We developed the prediction system for weight shift of pregnant women, and we reported that function already. In this paper, we conducted a demonstration experiment of the developed system. This experiment was carried out to evaluate the effectiveness of the system. Specifically, we test whether this system can help pregnant women living in an area without obstetrics. We developed originally a system that use only pregnant women's vital information. However, it desirable to measure the health condition of pregnant women detail using the weight information of the fetus when we put the system to practical use. Therefore, in this paper, we add the function that enable to measure the health condition of pregnant women detail using the weight information of the fetus to the system, and we describe the method of demonstration experiment using the system with new function. Nest, we describe the results of an experiment and consideration of improvement points. Finally, we describe the summary and future issues.

Keywords : Health management, Pregnant woman, Demonstration experiment

Digital health interventions for the detection, prevention and management of mental health problems in people with chronic diseases: A knowledge synthesis

○ Marie-Pierre Gagnon

Universite Laval

Purpose: Chronic diseases are the main burden on health systems and account for almost 70% of deaths worldwide. People with chronic illnesses are at higher risk for developing comorbidities in mental health, including anxiety and depression. Digital health interventions have been tested and proven to be effective for mental health problems, but there is a lack of evidence regarding their effectiveness for people with concomitant chronic diseases.

Methods: We conducted a rapid review of digital health interventions to prevent, detect and manage mental health problems in individuals with a pre-existing chronic disease. We searched 7 databases for systematic reviews published in 2010 or after, in English, French or Spanish.

Results: In total, 35 reviews were included in the synthesis. The included reviews were structured into 4 population clusters: 1) chronic diseases; 2) cancer; 3) mental health; and 4) children and youth. Most reviews described interventions performed in a specialized care setting (42%), targeted mostly to an adult population (83%), looked at interventions to manage and treat participants (60%), tested web-based and internet interventions (32%) by comparing them to usual care (48%), for people affected with cancer or various chronic diseases (77%).

Discussion: Digital mental health interventions are effective for people with chronic disease to improve depression and anxiety symptoms. The most effective methods of delivery are web-based and teleconsultation. There was not enough evidence to support the use of these interventions in the children and youth population.

Keywords : E-health, Chronic disease, Digital interventions, Mental health, Rapid review

Development of a remote swallowing screening test (Part 1): Selection of screening items

○ Fumitaka Omori¹, Kaori Wada¹, Takafumi Yamano², Kiyoko Iiboshi³, Masako Fujii-Kurachi⁴

1) Fukuoka Dental College Hospital

2) Fukuoka Dental College 3) Shigakukan University

4) International University of Health and Welfare

Introduction:

A problem encountered in previous studies of remote swallowing evaluation is that the test battery developed for face-to-face evaluation was directly adopted as an online test, making accurate assessment rather difficult. We aimed to develop a "remote swallowing screening test" via expert consensus.

Methods:

We used a Delphi survey to collect the views of 116 speech-language-hearing therapists (STs) experienced in dysphagia rehabilitation. We video-recorded remote evaluations of 30 items currently used to evaluate oral and swallowing functions. We asked all STs to watch the video and complete a questionnaire that used Likert scales to explore (1) the appropriateness of dysphagia detection and (2) the feasibility of remote detection. We also requested free-text descriptions of points requiring revision. This survey was repeated until consensus was attained.

Results:

On the first survey, 19 items were judged appropriate for detection of dysphagia, but five of them were considered impracticable for online usage ("maximum tongue pressure," "repetitive saliva swallowing," etc.). By the third survey, 13 items had attained consensus criteria. In factor analysis of the feasibility of remote detection, three factors ("Oral observation," "Overview evaluation," "Perceptual voice judgment") were extracted.

Discussion:

The online, clinical swallowing examination of Ward et al. (2012) includes "number of swallows" and "laryngeal elevation." However, STs considered it is difficult to perform these evaluations remotely. On the other hand, in the factor analysis, "Oral observation" and "Perceptual voice judgment," which are also important in face-to-face assessment, were extracted. It suggests that this test is configured with items that capture the essence of dysphagia while excluding items that are difficult to evaluate remotely.

Keywords : remote swallowing screening test, remote evaluation, speech-language-hearing therapists, Delphi survey

Telemedicine use in outpatient cardiology clinic during novel coronavirus pandemic: Patient profile from a single center experience.

○ Kavin Sundaram, Lisa Maher, Erica Podhajsky

Cedar Valley Cardiovascular Center

Introduction:

With COVID-19 pandemic, Telemedicine was offered as an alternative to face to face patient care. Our Cardiovascular Center launched a successful telemedicine program during this time. The purpose of this study is to analyze the patient profile during telemedicine use.

Methods:

Retrospective chart review was done to evaluate the patient profiles for all the patients who received Telemedicine service from March 23rd to April 30th, 2020. The control group was 1054 patients seen by face to face visit from April 1st, 2019 to April 12th, 2019.

Results:

Total of 2594 patients had Telemedicine visits with clinic providers during this time. Out of these, 1377, (53%) were male; 1217, (57%) were female. Average age was 69.15 ± 14 for male, and 69.12 ± 14.46 for female. For the control group, 55.1% were male and 54.9% were female and the average age was 70.01 ± 13.48 for the male and 69.66 ± 13.24 for female. The “new patient” visits for the telemedicine group was 2.73%, which was significantly lower than the control group which had 12.4% “new” patients. Post hospital discharge follow up was similar between two groups; 6.32% for the control group and 6.36% for the telemedicine group.

Conclusion:

There is no age or sex difference between the control group and the telemedicine group. Telemedicine group had significantly smaller percentage of “new patients” compared to control group. Telemedicine helped to maintain the post hospital discharge follow up which has been critical to reduce readmissions.

Conflict of Interest: None

Keywords : Telemedicine, Cardiology, Out Patient Clinic, COVID-19

Availability of vital signs during telemedicine visits: Experience of a single outpatient cardiology clinic during novel coronavirus pandemic

○ Kavin Sundaram, Lisa Maher, Erica Podhajsky

Cedar Valley Cardiovascular Center

Introduction:

During the Novel Coronavirus Pandemic, our cardiovascular center with 14 providers, implemented telemedicine program. The goal of this study is to analyze the availability of vital signs during these telemedicine visits.

Methods:

When the telemedicine visits were scheduled, patients were instructed to obtain weight, blood pressure and pulse prior to the tele visit. If they were unable to pre-record them, attempts were made to record them during the telemedicine visit. Available vital signs were documented in the medical records. Retrospective chart review was done to evaluate the availability of vital signs for all the patients who received Telemedicine service from March 23rd to April 30th, 2020.

Results:

Out of 2594 patients, 1377, (53%) were male and 1217, (57%) were female. Average age for males was 69.15 ± 14 and for females 69.12 ± 14.46. Out of 2594 patients, 939 patients, (36%) had blood pressure reading available; 609 patients, (23%) had pulse rate available; 1146 patients, (44.17%) had weight available. Sub group analysis showed that between male and female, the availability of blood pressure and pulse data are similar. But more men, 49.89% had weight data available when compared to only 37% of women.

Conclusion:

The availability of vital signs during Telemedicine visits to our outpatient cardiology clinic is low. It is unclear how much this affected the medical decision making. More studies are needed to know the specific reasons for this finding, how it affected the medical decision making and how to improve the availability.

Conflict of Interest: None.

Keywords : Telemedicine Visits, Vitals Sign, Cardiology Clinic, COVID-19

Current situation of telemedicine app introduction in Japan: A study examining the regional correlation

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Tetsuya Usui³, Mayumi Nishiguchi², Hodumi Horita²,
Kazuhiko Nakao²

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- 2) Medical Informatics, Nagasaki University Hospital
- 3) Laboratory Medicine, Nagasaki University Hospital

[Purpose] Due to the pandemic of the novel coronavirus (COVID-19), the government announced a state of emergency. This resulted a decrease in revenue among hospitals due to refraining visits among patients. Therefore, various telemedicine app raised attention for treating patient in a remote environment. However, there is no study about the situation of telemedicine introduction in Japan and its regional effect between COVID-19.

[Method] Introduction rate was examined by investigating the proportion of applied institutions using telemedicine app and total institution in each prefecture and compared between general clinics and hospitals. Also, we examined a correlation between cumulative confirmed COVID-19 patients and introduction rate of telemedicine app in each prefecture.

[Result] As a result, there were 5,234 medical institutions using a telemedicine app and 4,978 (95.1%) were general clinics and 256 (4.9%) were hospitals in Japan. Introduction of telemedicine app was significantly higher in general clinics than hospitals (4.9% vs 2.9%). In the correlation analysis there was a strong regional relationship between cumulative confirmed COVID-19 patients and introduction rate in general clinics (0.615), but only a weak correlation was found in hospitals (0.370).

[Discussion] This study revealed the situation of telemedicine in Japan and the regional relationship of telemedicine app introduction and COVID-19. The introduction of telemedicine app in Japan are still limited and only available in pandemic areas. Further investigation using real world data is necessary to reveal the effect of telemedicine.

[Conflict of interest] There are no applicable items for disclosure of conflicts of interest.

Keywords : Telemedicine, COVID-19, Regional relationship, Telemedicine app

Experiment of the use of amateur radio to support disaster medicine in large-scale disasters in Japan.

○ Futoshi Ohyama¹, Satoshi Iwamoto¹, Daisuke Sakurai¹,
Hiroki Matumoto², Manabu Sugita³

- 1) Tokai University school of medicine
- 2) Maebashi Institute of Technology
- 3) Juntendo University school of medicine

[Background] Amateur Radio has been reported to useful in emergency response to major disasters phase. Many countries are preparing for the formal includes of Amateur Radio into their emergency response plans. However, in Japan ,there is no plan to proactively use amateur radio in formal disaster response planning, especially in the medical response. This may be because conventional phone usage radio communication methods have their limitations and are not considered suitable for use in medical response. Recently, however, amateur radio has been going digital and data communications by simple devices. [Purpose] This study is to investigate whether modern amateur radio can be used for telemedicine in the event of an unprecedented a major disaster. [Method] We have prepared the equipment of digital data communication system by commercial amateur radio t and free software (Fldigi), which can perform digital data transmission on HF & V/UHF amateur radio bands. We used it to transmit simulated medical information. [Results] Experiments on short-range communication enabled the transmission of small (several KB) text and binary files.[Consideration] Now, the major telemedicine are considered to high quality video transmissions etc with broadband high-speed communication lines. Meanwhile, amateur radio data transmissions are very slow (usually less than 9600 bps) due to the limited frequency band width occupied by radio waves. In addition, there is no confidentiality. Under normal conditions of use, it is not suitable for telemedicine. However, public health information transmission, such as MDS reports as defined by WHO, would be sufficient. If such a system can be implemented in a situation where many communication ways have been lost, commander can be controlled the medical teams operating in the disaster area appropriately from a distance area. It is may contribute to medical care during the disaster.

Keywords : Amateur Radio, Disaster medicine, Telemedicine

Basic research of an ICT system to support nurses who provide medical care to evacuees at home in the event of a large-scale disaster

○ Satoshi Iwamoto^{1,2}, Futoshi Ohyama², Hiroki Matsumoto¹

- 1) Maebashi Institute of Technology
- 2) Tokai University

The purpose of this study is to construct an ICT system to support nurses who provide medical care to evacuees at home in the event of a large-scale disaster. And its system is a simple and reliable bidirectional system without latest technology.

The research method is the examination of a system based on two demonstration experiments. Experiment 1 is a demonstration experiment on surveillance in evacuees at home.

Experiment 2 is a demonstration experiment on the coordination of medical support for evacuees at home. The target system will be examined based on the results of the two demonstration experiments.

Keywords : ICT system to support nurses, evacuees at home, simple and reliable bidirectional system

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Chair **John M. Kane**

Behavioral Health Services, Northwell Health, The Donald and Barbara Zucker School of Medicine, Hofstra/Northwell, The Zucker Hillside Hospital

Prospects for psychiatry practice in the era of digital transformation: Focusing on early intervention and prevention

Taishiro Kishimoto Department of Neuropsychiatry, Keio University School of Medicine

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ISL2 Tele-Neonatology in the United States and Japan

co-sponsored by PHC Corporation

Chair **Takayuki Kori** Tone Central Hospital

Neonatal telemedicine in the United States

Jennifer L. Fang Division of Neonatal Medicine, Mayo Clinic, Rochester, MN, USA

Use cases of tele-neonatology in Japan

Mitsuaki Umino St. Mary's Hospital

Masataka Kinoshita Department of Pediatrics and Child Health, Kurume University School of Medicine

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ISL3

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Chair **Akihiro Nomura** Innovative Clinical Research Center, Kanazawa University

New therapeutic approach with smartphone application: Digital therapeutics/digital therapy and its clinical evidence in Japan

Kohta Satake

Department of Respiratory Medicine, Japanese Red Cross Medical Center, CureApp Institute, CureApp, Inc.

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ISL4

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Case studies of perinatal e-Health with iCTG in Thailand and Japan

Suchaya Luewan Chiang Mai University

Tokumasa Suemitsu Kameda Medical Center

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ISL5

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Orchestrating the tele-care environment with HL7 FHIR

Kota Torikai System Integration Center, Gunma University Hospital

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Prospects for psychiatry practice in the era of digital transformation: Focusing on early intervention and prevention

Taishiro Kishimoto, MD, PhD

Associate Professor of Psychiatry, Keio University School of Medicine

Developments in information and communications technology (ICT) have had an immense impact on the lives of people around the world. It is expected that these technological advancements will continue changing people's lives in the coming years, and also reshape the healthcare landscape.

Psychiatric illnesses account for the highest level of disease burden among humans, and also cause enormous economic losses. Ideally such illnesses could be quickly treated, but unfortunately, such a reality is still out of reach. However, the COVID-19 pandemic has made finding effective, fast treatments an even more pressing issue than before. It has been reported that the risk of developing depression, anxiety disorders, and obsessive-compulsive disorders has grown substantially during the pandemic due to increased concerns over being infected, economic anxieties, discrimination, altered lifestyles, etc., and a prompt investigation into effective treatments and how to deliver those treatments is greatly needed.

In these circumstances, telemedicine has proven to be an extremely powerful tool. In regions that have implemented it, it could be said that efforts to utilize telemedicine up until now have finally come to full fruition. However, telepsychiatry is still not accessible for all people globally.

Additionally, one large issue in the field of psychiatry is a lack of biomarkers. Currently, there are no known biomarkers that accurately translate into diagnoses, symptom severity evaluations, or treatment effectiveness. This lack of biomarkers is related to issues in the psychiatric field such as discrepancies in diagnoses, difficulties in evaluating symptom severity, and complications with developing new drugs. As developments in ICT have gained attention, so too have new patient monitoring systems using IoT technology, as well as Big Data analysis using AI – both of which can be applied to new techniques for evaluating illnesses. There have been many new applications reported, such as using wearable devices to identify diseases, using natural language processing to extract quantifiable disease features, and using internet activity data to support diagnoses.

Prevention and early identification of psychiatric illnesses are critical to overcoming them. Many psychiatric illnesses develop at a young age, and it is very possible that, because younger populations are more familiar with ICT, we can use digital technology to identify high risk individuals, and prevent and/or provide early identification of diseases. This presentation will provide examples of new technological advances and discuss the future outlook for the field of psychiatry.

Tele-Neonatology in the United States and Japan

Neonatal telemedicine in the United States

Jennifer L. Fang, MD, MS

Division of Neonatal Medicine, Mayo Clinic, Rochester, MN, USA

Teleneonatology programs use synchronous audio-video telemedicine systems to connect neonatologists with community hospital care teams during high risk neonatal resuscitations. Using telemedicine, remote neonatologists can visualize and actively guide the resuscitation and stabilization of at-risk neonates. The feasibility of teleneonatology has been proven, and evidence suggests that teleneonatology improves the quality of care, reduces unnecessary medical transports, and may generate a net savings to the health system. Community hospital staff and remote neonatologists are highly satisfied with teleneonatology programs. Teleneonatology presents an opportunity to improve healthcare delivery for neonates born in small or rural community hospitals.

Use cases of tele-neonatology in Japan

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The characteristics of perinatal care in Japan is that about half of deliveries each year are performed in local obstetric clinics. The clinics are required to have a system that can always respond to emergencies, since childbirth is the most life-threatening event in life. Therefore, having perinatal medical center and obstetric clinics closely cooperating by using telemedicine in the field of neonatal care would be purposeful. The NICU of St. Mary's Hospital has been transporting out-born neonates from clinics by specialized ambulance since the establishment of hospital. It is essential to share information quickly and accurately between the site and the center when responding to treatment, and using video calls on smartphones has been successful for past several years. However, there are issues to be solved, such as the need of person to control the device at the site, reliable connectivity, maintenance and inspection, and the development of devices suitable for actual clinical site is expected in the future. We will introduce the current status, challenges, and future prospects of telemedicine from the standpoint of neonatal care, based on comparisons between Japan and the United States.

New therapeutic approach with smartphone application: Digital therapeutics/digital therapy and its clinical evidence in Japan

Kohta Satake

Japanese Red Cross Medical Center, Department of Respiratory Medicine,
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Research and development of digital therapeutics has made great strides in the last several years around the world. In the United States and Europe, some digital therapeutics are provided regulatory approval and reimbursed in health insurance. Similarly, the development and research of digital therapeutics in Japan has been progressing in recent years. Many product developments and clinical trials have been conducted in areas such as addiction, mental illness, and lifestyle-related diseases. In particular, digital therapeutic for nicotine addiction has already undergone clinical trials and was approved by the regulatory affairs and covered by universal healthcare insurance in 2020.

In this session, I would like to introduce the development of digital treatment in Japan and the latest evidence and also mention the Japanese system for digital therapy.

*Please disclose COI.

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Case studies of perinatal e-Health with iCTG in Thailand and Japan

Suchaya Luewan (Chiang Mai University)

Tokumasa Suemitsu (Kameda Medical Center)

Under the COVID-19 expansion, e-Health initiatives are progressing rapidly in a variety of fields. In Japan as well, online medical care, which has not been widely practiced in the past, is beginning to spread rapidly. In the field of perinatal care, efforts using iCTG (Petit CTG) have been reported. Here, we will focus on the presentation by Dr. Suchaya of Chiang -Mai University, who has been working on perinatal care in Chiang - Mai for several years, as an excellent case study in Thailand. In addition, Dr. Suemitsu of Kameda General Hospital, who has been digitizing medical information for a long time, will be discussed as a new advanced case study in Japan in the field of perinatal care. We hope that you will find the approaches to each of these issues useful for your own e-Health efforts.

Orchestrating the tele-care environment with HL7 FHIR

Kota Torikai

System Integration Center, Gunma University Hospital

The realm of care (nursing), symbolized by eye contact and touching, was far from the application of telemedicine. The spread of the new coronas brought about the need for radical "non-contact medicine". At the same time, the progress and penetration of information technology has gradually revealed the usefulness and scope of telecommunication, as seen in telework. The essence of care is to draw out the patient's self-healing power and to support the patient so that he or she can lead an independent daily life. Post-war medical care has come to include lifestyle-related diseases in addition to injuries and illnesses, and the boundary between morbidity and health has become unclear. Gunma University Hospital has been developing and operating a medical information system that implements HL7 FHIR, a next-generation common format for medical information. At the same time, Gunma University Hospital and Carecom company have been conducting research and development on the feasibility of telecare and preventive medicine through the "Health Project". Through this presentation, we will show the prospects for telecare workflow integration research to contribute to increasing the number of healthy people in the world.