Introduction
It’s the year 2030- 40% of Americans are traveling in driverless cars...packages are being delivered by drones...and Americans are printing ideal foods using 3-D printers. Where will you be as a RDN or NDTR? Will you be at the cutting edge of digital health, reinventing your practice, or will your job be replaced by a robot, algorithms or other technology? This is the frank reality of today’s world. RDNs and NDTRs must be leaders in the digital health and technology space and continually reinvent the way in which they provide nutrition and dietetics services. We must embrace technological innovations to remain relevant in the next century.

So what is digital health? “Digital health is the convergence of the digital and genomic revolutions with health.” The digital revolution has led to such technologies as handheld computers and digital communication methods (e.g., email, text messaging, social media). Technology is transforming the way we learn, work and live. Currently individuals prefer communications via text messaging over phone calls. On average, Americans spend 26 minutes/day texting versus 6 minutes/day on phone calls. Access to information is at our fingertips and Americans rely on and expect instant communication.

Technology has changed the expectation for information and the way that business is conducted in the health care industry. Communications with physicians via a smart phone are becoming routine in healthcare. Sixty percent of millennials are interested in using telehealth options (e.g., video chat) so they don’t have to go into an office. Technology will only continue to transform the health care industry, and RDNs and NDTRs must be leaders in spearheading technological innovations.

Mega Issue Question: How can we transform all areas of dietetics practice and move the profession forward in a world where rapid advances in technology continually change the way we learn, work and live?

Meeting Objectives:
Meeting participants will be able to:
- Recognize current and projected technological innovations related to food and nutrition.
- Identify how evolving technologies impact our practice.
- Propose strategies to help members shift to higher skills and services that cannot be automated or programmed into technological systems.
- Generate ideas of technological innovations that RDNs and NDTRs can spearhead.
Identify strategies for empowering members to transform practice through technology.

The purpose of this Issue Briefing is to provide delegates and Academy members a brief glance into technologies of today and tomorrow and provide a summary of the Academy’s efforts in these areas. The technologies described are representative of common technologies in food and nutrition and are not intended to be an all-inclusive list. Much of the information on apps, wearables, 3-D printing, and distance education and simulations was taken from the Change Drivers and Trends Driving the Profession: A Prelude to the Visioning Report 2017, specifically the change drivers on technology and simulations, which can be found at:

[www.eatrightpro.org/resource/leadership/volunteering/committee-leader-resources/visioning-process](http://www.eatrightpro.org/resource/leadership/volunteering/committee-leader-resources/visioning-process). Delegates are asked to read the change driver on technology, *Technological Obsolescence is Accelerating*, in its entirety as pre-work for the HOD meeting. Technologies will continue to evolve, and the possibilities are endless in transforming nutrition and dietetics practice.

### Technologies

#### Electronic Health Records

During the past decade, health care has joined the ranks of most other industries by adopting technology. Due to regulations from the Health Information Technology for Economic and Clinical Health (HITECH 2009), the United States has adopted health Information Technology (health IT) - primarily as electronic health records (EHR) - at an unprecedented pace. What began as single digit EHR adoption of non-federal hospitals in 2008, has evolved to 97% having Certified EHR Technology. There is still significant work underway to assure that consumers have access to their electronic data. Both clinicians and consumers are exploring innovative ways to use health IT to assimilate critical data in the same location. Health IT, when used effectively, should reduce redundant tests, improve quality of care delivered, control costs and have the “right patient, right data, at the right time,” thereby removing “silos” of patient care data. This rapid health IT expansion and use impacts both clinicians and consumers.

#### Electronic communications to Provide Nutrition Services

Telehealth is the use of electronic information and telecommunications technologies to support long-distance clinical health care, health-related education, public health and health administration. Telehealth can help to meet consumer needs and reduce barriers to care. Much of what we know about nutrition and dietetics professionals’ engagement in telehealth comes from surveys conducted by the Academy of credentialed practitioners (members and non-members). In September 2015, a telehealth survey was distributed to 111,330 non-retired credentialed RDNs and NDTRs who agreed to receive emails from the Academy. A total of 5,087 individuals responded to the survey, representing a 4.6% response rate. 98% of respondents currently practiced in the United States. 30% of respondents (n=1,478) indicated they use telehealth to practice with clients/patients located within the state or
country of their primary practice location. 612 individuals reported practicing telehealth across state/country lines, with fairly equal representation of states within the United States.

Practitioners reported currently using or expecting to use within the next five years the following technologies and applications for telehealth:

- Tablet (weighted average 2.72)
- Telemedicine platforms (weighted average 2.71)
- Video conference apps (weighted average 2.29)
- Smart Phone (weighted average 2.14)
- Lap top (weighted average 1.78)

Other technologies and platforms reported by a large number of respondents included email, proprietary platforms, desktop computers and Apps/software.

Respondents of the 2015 survey were mixed in their perception of major barriers to providing telehealth. Significant perceived barriers consistently identified included:

- Limitations of existing payer coverage for telehealth services
- Inconsistent 3rd party payer coverage for telehealth services
- Unsecure technologies

Some respondents considered state licensure issues, clarity around HIPAA compliance issues, incompatible technologies, lack of training in telehealth best practices, and expansion of technology as major barriers, while fairly equal numbers considered the same issues as minor barriers.

The majority of respondents (69%) were not sure whether or not it was legal to provide telehealth services to clients/patients who don’t reside in the same state in which the provider is licensed/certified.

The 2015 Telehealth Survey responses suggest that members are positive and optimistic about future telehealth practice and their expectations to provide it. Survey respondents appear to be reluctant either to diagnose, do care coordination, or (as many respondents noted) provide medical nutrition therapy across state lines, because of the effect of uncertain or restrictive state licensure requirements on telehealth practice.

**Apps**

Health and fitness apps are the fastest growing category of apps with an estimated worth of $4 billion in 2014, likely to increase to $26 billion by 2017.³ Thirty-three percent (33%) of consumers today use health apps with the most frequent use related to fitness (59%) and diet/ nutrition (52%).³ For example, nutrition apps geared towards weight loss help to support adherence to diet monitoring³ and can be an effective tool for RDNs and NDTRs to use. As more consumers use health IT apps to monitor their health, this provides an abundance of information (data) and tools that RDNs and NDTRs can use in patient/client consultation, as well as insight into consumers’ behaviors. The Academy’s Food and Nutrition Magazine provides reputable reviews on food and nutrition apps:

http://www.foodandnutrition.org/Nutrition-Apps/

**Wearables**

Consumers will become “CEOs of their own health” in the future, as biometric sensors monitor their health status and provide warnings to stop disease before it happens.¹⁰ Future digestible, embedded, and wearable technological sensors will monitor vital signs and health parameters 24 hours a day, then transmit data to the cloud and send alerts to medical systems in real time.¹⁰,¹¹,¹²,¹³,¹⁴ In the past year,
the number of consumers who use health wearables to track their health has increased from 9% to 21% and will likely continue to grow as consumers take charge of their own health. Information from wearables can assist RDNs in creating customized nutrition interventions for their patients, clients and consumers.

**3-D Printing**

“3-D printing is an object creation technology where the shapes of the objects are formed through a process of building up layers of material until all of the details are in place.” 3-D printers are capable of printing perfect, personalized foods in terms of size, color, texture, taste, aroma and health properties. To see the possibilities, visit *The Coming Food Printer Revolution*.

**Distance Education and Simulations**

Education in the U.S. is moving rapidly to the Internet. Fifty percent of all traditional colleges are projected to collapse by 2030, paving the way for a new, lean educational model of personalized learning. This may impact the educational model for future nutrition and dietetics practitioners.

In addition, the use of simulation in health care education is growing substantially. By simulating actual work settings, simulations play a vital role in training prior to employment, as well as updating skills of current practicing professionals. In the health care area, simulation has historically been implemented in medical and nursing education and has more recently gained popularity in health professions curricula, with educators noting many advantages associated with the use of simulations. When compared with clinical experience, research has shown similar or improved learner attainment of knowledge and skills from simulation. Although limited in number, research studies have also shown favorable outcomes of using simulations in nutrition and dietetics. The use of simulations in dietetics education will continue to expand because they are effective pedagogical tools, consistent with competency-based education, have the potential for cross-discipline competency development and can help optimize scarce clinical education resources.

**Considerations with Digital Health**

While technology and its implications for digital health are exciting, it also poses considerations for the nutrition and dietetics profession. Such considerations include licensure and the practice of telehealth, privacy and security of patients and clients’ data, and scope of practice.

**Licensure**

Licensure and telehealth requirements come into play when nutrition and dietetics practitioners reside in a different state as their patients/clients. The following are common, but not universal, requirements that practitioners need to consider:

- If care is provided to a patient/client in the same state that the practitioner is licensed and the practitioner’s license is in good standing, there should be no significant licensure issues unless
a state licensure law includes specific telehealth provisions (that may include the required procedures for providing telehealth).

- If care is provided to a patient/client in a different state than the practitioner is located, the practitioner likely needs to be licensed in each state in which he or she electronically practices and the state in which the practitioner is located.\textsuperscript{22}

For more information on licensure and telehealth, visit the \textit{Academy’s website}, including the Telehealth Practice Tips.

\textbf{Privacy and Security}

The protection of patient information is paramount in the delivery of telehealth. “Within the United States, any identifiable information to be transmitted electronically as part of nutrition care should be performed in accordance with the Health Insurance Portability and Accountability Act (HIPAA).”\textsuperscript{23(p1213)} The HIPAA Privacy Rule protects all individually identifiable health information, known as protected health information (PHI), held or transmitted by a covered entity, in any form or media, whether electronic, paper, or oral.\textsuperscript{24} The HIPAA Security Rule establishes “a national set of security standards for protecting certain health information that is held or transferred in electronic form.” HIPAA requires RDNs to “adopt and maintain appropriate technical, administrative and physical safeguards to protect the confidentiality, integrity, and security of all individually identifiable health information created, received, maintained or transmitted in an electronic form as part of patient care.”\textsuperscript{25} The Privacy Rule and Security Rule apply to any form of telehealth, whether it be video consultations\textsuperscript{23} or remote counseling via smartphones and apps.\textsuperscript{26}

\textbf{Scope of Practice}

The growing number of online nutrition courses and certificate programs has led non-RDN providers, including many representing themselves as health coaches, to hold themselves out as purportedly “qualified” providers of nutrition services. Non-RDN health coaches and other providers are able to provide generalized nutrition education that is available to the public. Oftentimes these providers, who

\textit{Are not RDNs}, do practice individualized nutrition counseling or Medical Nutrition Therapy services via telehealth. They advance gradually beyond the usual or general non-medical nutrition information found in the public domain. If these services being provided are in the Licensed Dietitian Nutritionist (LDN) scope of practice, (as defined in the state statute), consumers and qualified practitioners should report unqualified practice to the state dietetics licensure or certification board for investigation and possible penalty.

\textbf{Academy’s Efforts to Support Digital Health}

The Academy of Nutrition and Dietetics has been and will continue to work on many fronts to ensure RDNs and NDTRs are leading efforts in the digital health and technology arenas.
**Nutrition Informatics**

Nutrition Informatics, defined in brief as the “intersection of nutrition, information and technology” began as a HOD Mega Issue in 2008. The BOD established the Nutrition Informatics Committee (NIC), which later added the NIC Consumer Health Informatics Work Group. The Informatics and Standards Committee was added in 2011 to create/promote for nutrition inclusion in health Information Technology standards development. The NIC Consumer Health Informatics Work Group addresses the many emerging technologies, software and innovations which RDNs are presently using.

Presently, regulations established by the Office of the National Coordinator of Health Information Technology (ONC) provide guidance on the certification of health IT in the U.S. The Academy has participated in this process in order to assure that nutrition care is embedded in required components of health IT. A primary component of these regulations is that data should “follow the patient” across care settings, thereby providing improved care using all available data. As technologies and polices evolve, the dietetics profession will be impacted with diverse mechanisms for receiving/sending data electronically with both the patient/client and other clinicians.

As health IT is optimized in the U.S., exchange of health data electronically will become the norm, such that a referral or consult performed by an RDN can include RDN documentation across care settings. Academy work in this area has established the foundation for this to occur. RDNs practicing in innovative ways should look for and request this functionality such that nutrition remains an expected component of the “Care Plan.”

**Telehealth Resources**

An Academy staff workgroup, composed of staff from multiple areas, will be developing a promotion campaign to raise awareness of existing Academy resources on the topic of telehealth. The staff workgroup will be looking at approaches to more quickly locate telehealth information on our website, such as consideration for a shorter URL and expanded search terms. This workgroup will review existing resources to determine the need to repackage the content to better meet member needs based on insights gained from the 2015 telehealth survey. Potential gaps in existing content will also be identified and addressed.

**Academy’s Licensure Efforts**

“The Academy continues to work to enhance uniformity in state licensure statutes to facilitate interstate practice.” Current efforts and issues being addressed include:

- potential for interstate compacts to promote licensure for RDNs across state lines;
- As states make revisions to their licensure laws, the Academy has worked to (1) include language that allows RDNs to practice dietetics or nutrition for a specified, limited amount of time without being licensed in the state, and (2) facilitate and expedite the process of licensing out-of-state RDNs.
- Various states across the country license both RDN and non-RDN practitioners as LDNs; the lack of uniformity for these states’ licensure qualifications complicates the ability of practitioners to provide telehealth services.

**Work of the Policy Initiatives and Advocacy team and the Nutrition Services Coverage team**

The Academy seizes opportunities to influence federal legislation and rule making related to
telehealth. On an annual basis, the Academy submits comments to the Centers for Medicare & Medicaid Services (CMS) on the Physician Fee Schedule supporting expansion of telehealth services to improve access to health care for all Medicare beneficiaries, not only those in rural and professional health shortage areas. The Academy has also offered comments to the CMS Innovation Center and the Senate Finance Committee Chronic Care Workgroup recommending expansion of telehealth services as an opportunity to prevent and manage chronic diseases in both the pre-Medicare and post-Medicare populations. In addition, the Academy advocates with national private payers to recognize MNT via telehealth as a covered service and to recognize the need for access to both wellness services and MNT (the former does not replace the latter). For example, as part of its partnership with the Alliance for a Healthier Generation, the Academy has been engaged in conversations with signatories around reimbursing the Healthier Generation Benefit as a telehealth service. National private payers and telehealth start-up companies often reach out to the Academy as a resource around telenutrition services. The Academy uses these opportunities to promote utilization of RDNs and NDTRs as service providers. http://www.eatrightpro.org/resources/news-center/on-the-pulse-of-public-policy/regulatory-comments

Work of the Nutrition Services Payment Committee
Since the approval of the MNT codes within the American Medical Association’s Current Procedural Terminology (CPT®) manual, representatives from the Academy have served on the AMA CPT Health Care Professionals Advisory Committee (HCPAC). In this capacity, the Academy has worked with groups of physician and non-physician providers to develop codes for telephone and on-line assessment and management services. The Academy’s CPT HCPAC Advisor serves on a newly formed CPT Telehealth Services Workgroup. Through its participation on this specific workgroup, as well as through its participation within the overall AMA CPT structure, the Academy is positioned to influence the development of CPT codes available for use by RDNs that facilitate use of and payment for a wide array of telehealth services.

Conclusion
The Academy recognizes the importance of RDNs and NDTRs’ involvement in digital health and technology in providing nutrition services. “Dietetics practitioners who can develop these technologies will be in demand. Others will need to shift to higher-value services that cannot be programmed into expert systems.”28[ p 511] RDNs and NDTRs who can develop technological innovations will be in demand.28

Call to Action: Will you be a part of this future? Will you develop technological innovations that will advance nutrition and dietetics practice?
References


