**SUPPLEMENTARY MATERIALS**

**Supplementary Material 1. Instructions for Study Participants.**

**1. Swallowing Pills**

1. Show the pill close to the webcam clearly with one hand
2. Swallow the pill
3. Show both of your empty hands to the webcam
4. Show the bottom of your drinking cup to the webcam
5. Open your mouth and tilt your head up and down, pull your cheeks out, and lift up your tongue

**2. Eating Food**

***Before you eat***

1. Pick up one item of food and, if applicable, break the seal on the container
2. Now tilt the food item so that the webcam can see the food inside the container
3. State the name of the food item(s) (if applicable)
4. Repeat the above steps for each item of food
5. Make sure each food item is visible to the webcam before eating

***While eating***

1. Eat all of your foods, including any condiments such as salad dressing and butter
2. Make sure to scrape off and eat any food attached to the container lid, in the bottom of the container, etc.
3. Keep your hands above the table and in the field of view of the webcam at all times
4. Keep your head in the field of view of the webcam at all times
5. Make sure each food item is visible to the webcam at all times
6. Don’t get up and leave the table

***After you eat***

1. Show each empty food and beverage container to the webcam. You must either:
   * + - Lift up and tilt the container enough so that the bottom of the container is visible to the webcam, or
       - Pan the webcam over the empty containers
2. Unfold any napkins you may have used and show them to the webcam

**Supplementary Material 2. Video chat technology set-up.**

We reviewed and evaluated video chat technology to identify the optimal hardware and software for remote monitoring of adherence. To accomplish this objective, we compared video chat software, webcams (e.g. DropCam), and surveillance cameras (including baby monitors) in the summer of 2014. Our requirements were that the video chat technology must be: (1) encrypted to meet Health Insurance Portability and Accountability Act (HIPAA) requirements, (2) easy to use, (3) able to record at least 20 minutes of video, and (4) have automatic call answering and video recording so clinical study staff do not always have to be present during the video chat. The latter two features are helpful for video monitoring of adherence, since study participants may eat meals or take pills at any time of day. In addition, we prioritized the following desirable features: (1) wide availability, (2) low cost, (3) portability, and (4) video resolution.

We were initially unable to find an option that met all these criteria and could automatically record more than mere minutes of video. However, after consulting with two technology experts, we identified a solution. First, the software program Skype (Skype Communications SARL, Luxembourg) can be configured to automatically answer incoming video chat calls under “Preferences”. Second, when Skype is paired with CallNote Premium (Kanda software, version 3.0.41, Newton MA), calls of arbitrary length can be automatically recorded, and these videos are securely stored until they are downloaded. We therefore decided to use Skype with the automatic call answering function enabled, paired with the video recording service CallNote Premium. This technology was selected in summer 2014 and additional services and software are now available.

After choosing the software, we optimized both the hardware set-up and the recording environment. We found that the field-of-view, angle, and image resolution of the video were the most critical factors for optimizing the quality of the video recordings. For example, in using video chat technology to monitor dietary adherence, the small field-of-view of smartphone webcams makes it difficult to view the participant’s face, upper body, and all the food containers at the same time. To improve the field of view, we used a wide-angle clip-on lens (Camkik Universal 3 in 1 Cell Phone Camera Lens Kit, Camkik, Dayton, WY), which can be used on smartphones, laptops, and tablets. To improve the viewing angle (for smartphones only), we used an inexpensive small, bendable tripod (Case Star Octopus Style Portable and Adjustable Tripod, Case Star Manufacturing Company, LLC, Munster, IN).

This hardware and software combination met criteria that would allow deployment of video chat technology in a clinical study—in particular, it was HIPAA compliant and could be used without a study staff member present. As identified in feasibility investigation, the vast majority of respondents already own the hardware necessary to video chat, and most video chat software is free. Importantly, the hardware and software can easily be deployed in participants’ homes, and the video chat method allows participants to complete procedures, such as eating a provided meal or taking a pill, in their home and to have the procedure recorded via video chat for later viewing by study personnel to quantify adherence.

**Supplementary Material 3. Pennington Biomedical Survey on Barriers to Study Participation and Use of Video Chat Technology.**

*This survey is anonymous. By completing this survey, you are consenting to partaking in this survey on participation in research studies and on attitudes towards webcams.*

**Section 1. Participating in Research Studies**

1. Have you participated in a research study before?

* Yes, multiple times
* Yes, once
* No

2. Has your schedule ever prevented you from participating in a research study?

* Yes, multiple times
* Yes, once
* No

3. Has transportation ever prevented you from participating in a research study? Select all that apply.

* No
* Yes, because there was no reliable or convenient transportation for me
* Yes, because the cost of transportation is significant
* Yes, because the commute is too long for me
* Yes, for another reason. Please list reason: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. Would the option of scheduling clinic visits on evenings or weekends help you participate in more research studies? Select all that apply.

* No
* Yes, clinic visits on weekday evenings would help
* Yes, clinic visits on weekends would help

**Section 2. Technology Use Questions**

5. How comfortable are you with using technology such as computers, smart phones, and/or tablets?

* Very comfortable
* Comfortable
* Neutral
* Uncomfortable
* Very uncomfortable

6. Do you have a computer either at home or at work that has both internet access and a webcam?

* Yes, at both home and work
* Yes, at home only
* Yes, at work only
* No

7. Do you have a smart phone, tablet, or portable laptop with a webcam and access to the Internet and/or Wi-Fi (iPhone, Android, Windows phone, etc.)? Select all that apply.

* Yes, I have a smart phone
* Yes, I have a tablet
* Yes, I have a portable laptop
* No
* Unsure

8. Do you prefer to screen for research studies on the internet or on the phone? Select all that apply.

* I prefer to screen on the internet (Web screener)
* I prefer to screen on the phone because the online Web screener is difficult to use
* I prefer to screen on the phone because I do not have reliable internet access
* I prefer to screen on the phone for a reason not listed above. Please list reason: \_\_\_\_\_\_

9. Have you ever participated in live video chatting on a computer, a smart phone, or a tablet (for example, Skype or FaceTime)?

* Yes
* No

10. How comfortable are you with using video chatting technology?

* Very comfortable
* Comfortable
* Neutral
* Uncomfortable
* Very uncomfortable

11. Which of the following video chatting technologies have you used before? Select all that apply.

* Skype
* ooVoo
* Google Hangouts
* DropCam
* FaceTime
* Other. Please list the technology: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* None

**Section 3. Video Chat Questions**

*For the following questions, assume that you are given a webcam with internet access and receive basic training on how to use the webcam.*

12. Pretend you are participating in a study that requires you to do a certain task such as a check-in visit, eating food, taking a medication, or exercising while being supervised. Would you prefer to come into the clinic in-person to do the task, or do the task at a place of your choice while being watched via webcam?

* I strongly prefer to use a webcam
* I prefer to use a webcam
* No preference
* I prefer to come to the clinic
* I strongly prefer to come to the clinic

13. If you selected “I prefer to come to the clinic”, what was your reason? Select all that apply.

* I prefer to have in-person contact
* I’m not comfortable using the technology
* I don’t want to be watched performing the specific task via webcam
* Other reason. Please list reason:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Not applicable

14. If you selected “I prefer to use a webcam”, what was your reason? Select all that apply.

* I like using technology
* I prefer interacting with people over the internet, rather than in-person
* I prefer not to spend time commuting/traveling to the clinic
* My work schedule makes it difficult to come to appointments in the clinic
* My family and social obligations make it difficult to come to appointments in the clinic
* I am too busy and don’t have the time otherwise
* I live or work too far away
* I want to save the gas money, bus fare, etc.
* I do not have reliable or convenient transportation
* Other reason. Please list reason:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Not applicable

15. If you had a scheduling conflict that prevented you from participating in a study, but you would be allowed to participate in the study if you used a webcam to show that you performed the task, would you be willing to use a webcam?

* Yes, I would be willing to use a webcam
* Maybe
* No, I am unwilling to use a webcam

16. If regular motivational and support meetings held via a webcam were options to help encourage you while participating in a study, would you be likely to want them?

* Yes, I would like motivational support via webcam
* Maybe
* No, I would not want motivational support via webcam

17. Overall, would you be willing to use a webcam to participate in a clinical study?

* Yes, I would be willing to use a webcam
* Yes, I would be willing to use a webcam, but only if I am not recorded

(*Assume that any video recordings of you will be protected and kept private and confidential.)*

* Maybe
* No, I would not be willing because I’m not comfortable with the technology
* No, I would not be willing because I don’t want to be watched by webcam
* No, I would not be willing for another reason. Please list reason: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Section 4. Background Questions**

18. Are you an employee at Pennington Biomedical Research Center or at LSU?

* No
* Yes, I am an employee at Pennington Biomedical Research Center
* Yes, I am an employee at LSU

19. How old are you? Enter your age in years: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

20. What is your gender?

* Male
* Female

21. What is your race?

* African or African-American
* Asian
* Caucasian
* Hispanic
* Other
* Prefer not to answer

22. What is your ethnicity?

* Hispanic
* Non-Hispanic
* Prefer not to answer