Technology Considerations for Electronic Directly Observed Therapy (eDOT)

The Michigan Department of Health & Human Services (MDHHS) Tuberculosis Unit does not endorse any product or application for use in electronic directly observed therapy (eDOT). These options are provided for review and consideration at the local public health level and should be reviewed with input from local public health staff and local legal counsel. This is not an exhaustive list of potential applications and products. MDHHS has made no assessment on whether the product is compliant with state or federal privacy laws, such as HIPAA.

Terms to Know

★ **eDOT**: A type of *telemedicine* which uses electronic technologies to remotely monitor TB patients ingesting their medication, either in real-time or recorded. In addition to eDOT, this type of DOT is sometimes referred to as virtually observed therapy (VOT), mobile DOT (mDOT), remote DOT, video DOT (VDOT), and video-enhanced therapy (VET).

★ **Synchronous eDOT**: Providers observe patients taking their medications via videophone, smartphone, tablet or computer, allowing the patient and provider to see and hear each other in real time. Synchronous eDOT can be implemented using fixed phone lines, the Internet or cellular networks.

★ **Asynchronous eDOT**: Also referred to as "*store-and-forward*", patients record themselves taking their medications and care providers subsequently observe the recordings and document that medications were ingested. This can be accomplished using smartphones, tablets or computers that can record videos and forward them electronically to the TB program to be viewed at a time chosen by the DOT worker. Like synchronous eDOT, asynchronous eDOT requires network connectivity and, we suggest, a secure route for data transmission; however, asynchronous eDOT does not require network connectivity at the time the patient ingests his or her medication.

★ **End-to-End Encryption**: Also known as *E2EE*, this is a system of communication where the only people who can read the messages, videos, or other files, are the people who are communicating, not even the company that runs the messaging service. Messaging services may only offer encryption in transit, and not full E2EE. It is important that you understand at what process the messages and other files you are sending are encrypted.

Things to Consider When Choosing an eDOT Application

✓ **HIPAA Compliance, Privacy and Security**: Efforts must be taken to make eDOT data transmission secure by using end-to-end encryption. Health department IT staff should be familiar with the technologies available regarding computer and mobile device security and help select eDOT applications that meets these standards. Proper environments for recording, encryption, safe transfer, appropriate documentation and storage, and processing of health data should comply with HIPAA.

✓ **Network Connectivity**: Devices used for eDOT may transmit video or audio to the DOT worker via cellular or internet connections. Since synchronous eDOT systems require a consistent, active connection throughout the patient/provider interaction, network connectivity requirements are more stringent for this method than asynchronous eDOT.

✓ **Data Management**: When choosing an eDOT application, consider the minimum data requirements for both the DOT nurse and the client. Also, be aware of how you can integrate your data into an EMR system, and how you plan to store it securely.

MDHHS acknowledges that products specific to telemedicine can be expensive for health departments to purchase and maintain. If you chose to use an application for eDOT that is not HIPAA compliant, clients should be informed they are using unapproved applications to capture, store or transmit PHI, which could result in inadvertent disclosure of their data.

Health departments may choose to provide guidance to patients on how to best protect their own privacy. To communicate expectations for both the patient and the health department, written agreements may be appropriate pertaining to the health department's policy regarding the patient sharing portions of his or her own information.

Programs Developed Specifically for Telemedicine

Program	Website	E2EE	Live video	Message	Voice calls	Store-and-forward	OS	Notes
AiCure	aicure.com	✓	✓	X SMS ✓ IM	X	✓		
Hipaa Bridge	hipaabridge.com	✓	✓	X SMS ✓ IM	X	✓	✓ iOS ✓ Android ✓ MacOS ✓ Windows	With these programs, you are paying for the IT support, data integration, training and programing designed specifically for eDOT and treatment adherence. There is a cost associated with all these options, however you can be ensured your patient's private information will be protected and documentation will be simplified.
emocha	emocha.com	✓	✓	X SMS ✓ IM	X	✓		
Sure Adhere	sureadhere.com	✓	✓	X SMS ✓ IM	X	✓		

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MDHHS — Michigan Department of Health & Human Services

UNITE TO END TB

Programs NOT Specific to Telemedicine

Program *	Website	E2EE	Live video	Message	Voice calls	File sharing *	OS	Notes
CoverMe	coverme.ws/en/index.html	✓	✗ Share/store video files †	✓ SMS ✓ IM	✓	✓	✓ iOS ✓ Android ✓ MacOS ✓ Windows	Encrypted voice calls, messaging and file sharing; self-destructing IM, which can be remotely wiped; message-read receipts; secure vault for file storage
Dust	usedust.com	✓	✗	✗ SMS ✓ IM	✗	✓	✓ iOS ✓ Android ✓ MacOS ✓ Windows	Messages can be remotely wiped; files are not permanently stored; messages permanently erase within 24hrs or 100 seconds (user chooses)
Facebook Messenger	messenger.com	✓ / ✗ Must be enabled	✓	✗ SMS ✓ IM	✓	✓ / ✗ Available on website	✓ iOS ✓ Android ✓ MacOS ✓ Windows	How to enable end-to-end encryption for IM (voice calls and video cannot be encrypted); file sharing is only available when using the Messenger tool built into the website; privacy concerns in wake of Cambridge Analytica scandal
FaceTime	[Available in iTunes]	✓	✓	✗ SMS ✓ IM	✓	✗	✓ iOS ✓ MacOS	This app is only available on Apple products

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	Program *	Website	E2EE	Live video	Message	Voice calls	File sharing ±	OS	Notes
	iMessage	[Available in iTunes]	✓ / X ------------------ Between iPhones only	X	✓ SMS ✓ IM †	X	✓	✓ iOS ✓ MacOS	This app is only available on Apple products; SMS messages are only encrypted when messaging (IM) between iPhones; self-destructing message feature (iOS 10 or later); careful regarding iCloud backup, if iCloud is hacked or subpoenaed by the court your messages could be read; Apple can't read the messages, but an exploit was recently found
	Google Duo	duo.google.com	✓	✓	X SMS X IM ------------------ Video messaging	✓	X	✓ iOS ✓ Android ✓ MacOS ✓ Windows	Google's answer to FaceTime, this is a simple video chat service that can work on all platforms; login with phone number, not Google account
	Google Messages	messages.google.com	X ------------------ Encrypted in transit only	X	✓ SMS ✓ IM	X	X	✓ iOS ✓ Android ✓ MacOS ✓ Windows	This messaging service took the place of Google Allo, and soon Google Hangouts
	Line	line.me/en-US/	✓ / X ------------------ Must be enabled	✓	X SMS ✓ IM	✓	✓	✓ iOS ✓ Android ✓ MacOS ✓ Windows	Must turn on "Letter Sealing" to enable E2EE
	Pryvate	pryvatenow.com	✓	✓	X SMS ✓ IM	✓	✓		Currently $5.62/month; everything is encrypted; involves no servers or middleman for communications; "self-destruct" feature to delete messages

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	Program *	Website	E2EE	Live video	Message	Voice calls	File sharing ±	OS	Notes
	Signal	signal.org	✓	✓	X SMS ✓ IM	✓	✓	✓ iOS ✓ Android ✓ MacOS ✓ Windows ✓ Linux	Edward Snowden uses this app and it is recommended by WIRED; company cannot read messages; messages disappear after a certain amount of time has elapsed
	Silence	silence.im	✓	X	✓ SMS X IM	X	X	✓ iOS ✓ Android	Uses encrypted SMS/MMS messages with no internet connection required
	Skype	skype.com/en/	✓ / X ------------------------- Must be enabled	✓	✓	✓	✓	✓ iOS ✓ Android ✓ MacOS ✓ Windows	How to Get End-to-End Encryption in Skype
	Surespot	surespot.me					✓		Does not store or share your data
	Telegram	https://telegram.org	✓ / X ------------------------- Must be enabled	✓	✓		✓	Both	Must turn on "Secret Chats" to enable E2EE. Can "self-destruct" messages and files, which enables message to disappear from all devices
	Threema	threema.ch/en/	✓	✓	✓		✓	Both	Messages can only be read by the indented recipient; deletes messages you send from servers once delivered; has 'private chats' feature which requires a PIN. QR code and fingerprints are available for verification.$2.99

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Program *	Website	E2EE	Live video	Message	Voice calls	File sharing ±	OS	Notes
Viber	viber.com	✓	✓	✓		✓	Both	Messages and files are never stored on Viber's severs once delivered. Offers hidden and self-destructing chats.
Whatsapp	www.whatsapp.com	✓	✓	✓		✓	Both	Cybercriminals are technically able to drop into a group chat however they cannot decrypt conversations. Owned by Facebook, who can extract metadata from your habits.
Wickr Me	wickr.com	✓	✓	✓		✓	Both	Can delete geotags; "Secure Shredder" erases files and messages. Does not require phone number or email address to register; does not collect data or have access to users' data.
Wire	wire.com/en/							Fully encrypted video, secure file sharing

* Apps listed are free, unless otherwise noted.

† Encrypted, although not clear if it is E2EE

± File sharing: Used as a synonym for "store-and-forward" (asynchronous) in this chart. This includes not only videos, but photos, documents and audio files, which can be used for eDOT and TB case management.

https://heimdalsecurity.com/blog/the-best-encrypted-messaging-apps/
https://www.wired.com/story/whatsapp-security-flaws-encryption-group-chats/?mbid=nl_011018_daily_intro
https://support.viber.com/customer/en/portal/articles/2017401
https://www.wired.com/story/ditch-all-those-other-messaging-apps-heres-why-you-should-use-signal/
https://www.wired.com/2016/08/whatsapp-privacy-facebook/

https://heimdalsecurity.com/blog/the-best-encrypted-messaging-apps/
https://www.avg.com/en/signal/secure-message-apps
https://www.techradar.com/best/best-encrypted-messaging-app-android

E2EE, end-to-end encryption; **eDOT**, electronic directly observed therapy; **iDOT**, internet directly observed therapy; **IM**, instant message, send vial internet data; **OS**, operating system; **SMS**, short message service AKA text message, send via cellular service; **vDOT**, video directly observed therapy