Thoughts from both sides of the stethoscope with *Alexa* in the middle

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Thoughts Based On Alexa Skill Development Experience

The reasons for the success of Our Little Secret (over 19,000 Skill Activations & over 180,000 Utterances) isn't clear, but perhaps due to its simplicity

- → Suggests that to maximize usage, make sure outcome is worth the process for the user

Burn Your Calories uses 10% of the activities within a database (820 activities) that I fully used on my www.InsightsForHealth.com website due to difficulty in presenting all the choices possible

- → So, as alluring as Voice is, by itself even with current displays, it can be limiting for more complex Skills/functionality

Goal

- Share some use cases based on my experience in response to 2 challenges to our healthcare delivery system

Caveats

- While many of these are based on my past medical director & current patient experiences, others are based on my limited understanding of current practice processes
- Since I am not in the business of making products for sale, I have little knowledge of the competitive landscape

As We Begin
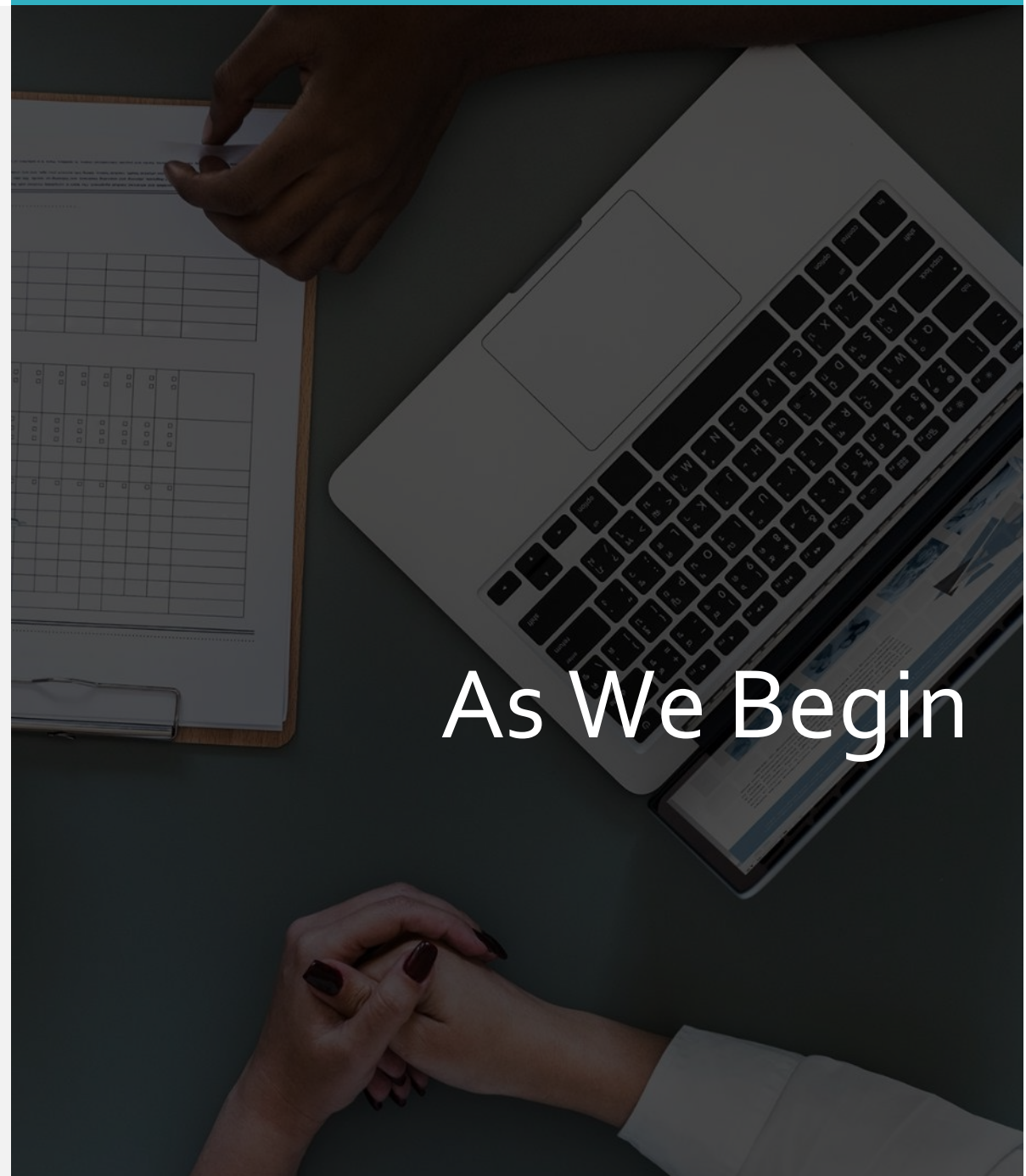
Challenge to Healthcare Delivery - I

INCREASING GAP BETWEEN PROVIDERS AND PATIENTS

Supply
Demand

2005   2010   2015   2020   2025
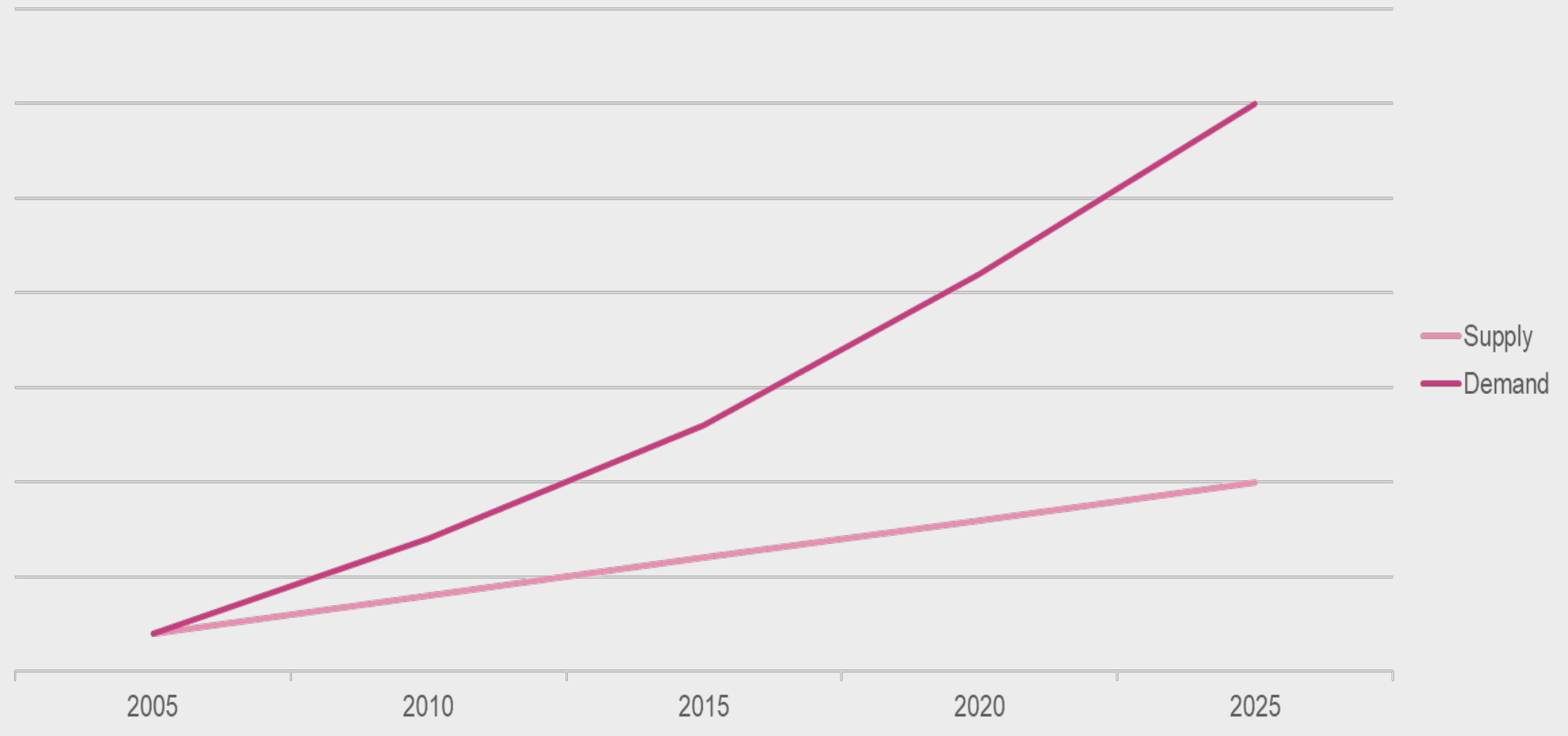
Challenge To Healthcare Delivery - II

Nineteenth & early twentieth century physicians had little to offer the patient other than their presence & empathy

Today's physicians have many therapeutic modalities at their disposal, but time constraints limit getting to know their patients beyond pathology, lab tests, & x-ray results

Pre-Visit

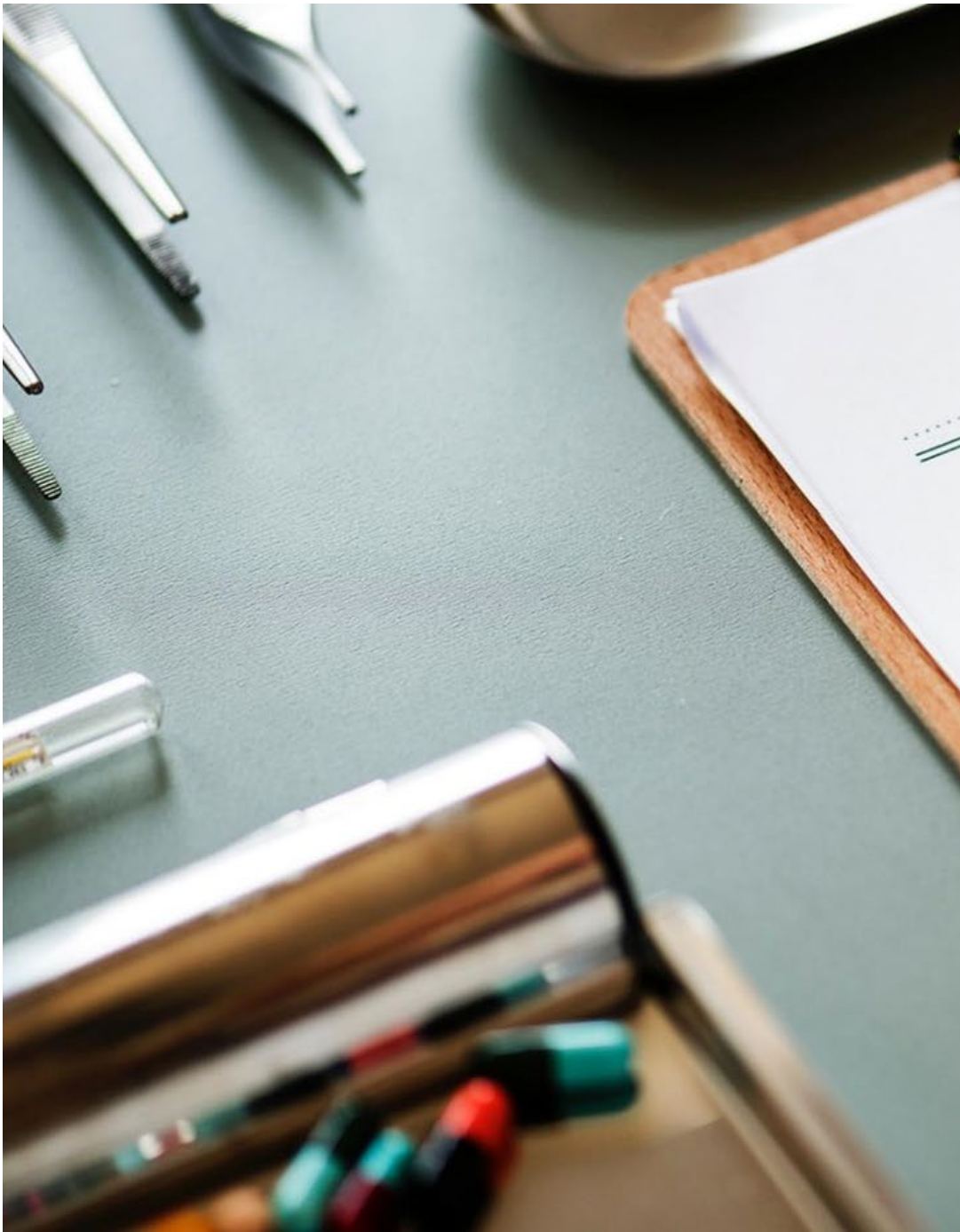- Office Visit Prepper
- Medical Record Retriever

During Visit

- Office Visit Prepper
- Office Visit Scribe Translate
- Zebra Finder

Post-Visit

- My Follow Up Care
- Chronic Care Coach

Episode of Care
Office Visit

Pre-Visit

Office Visit Prepper Concept

A vocal interface for Patients to provide information prior to the office visit

Looking for opportunities to build rapport while gathering information that may be relevant to helping the Patient optimize their health

Alexa asks questions regarding
- Goals
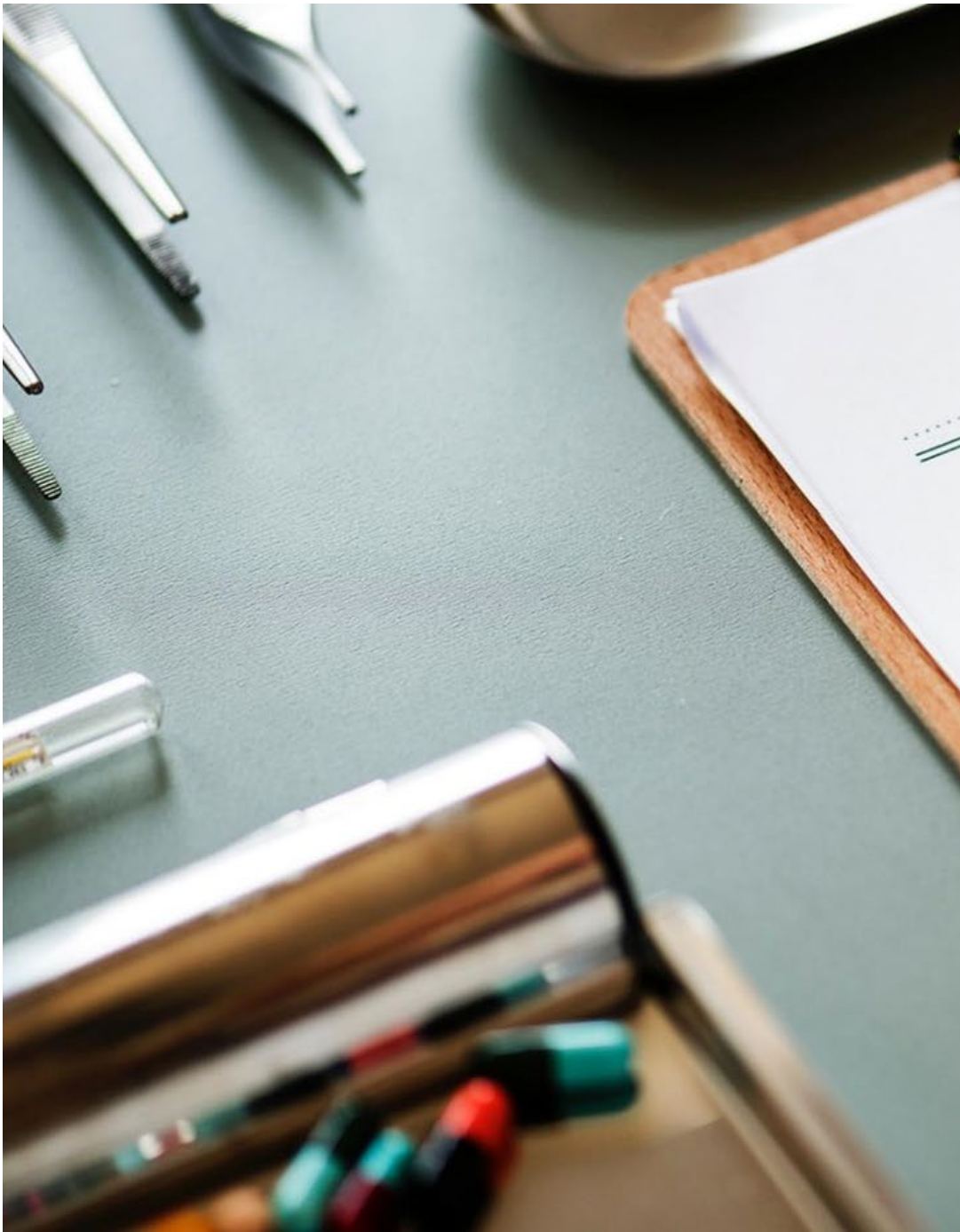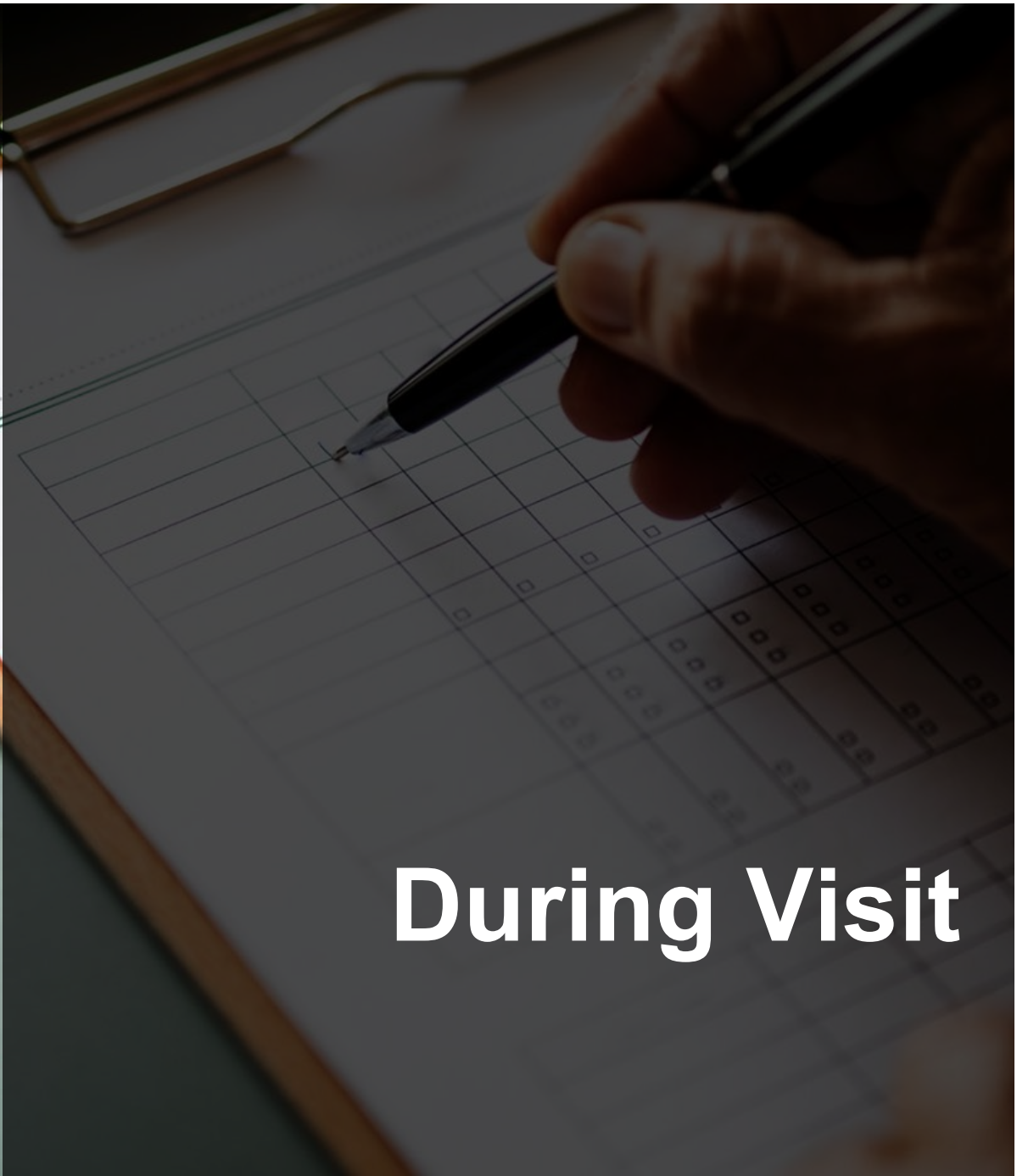- Barriers
- De Jong Gierveld 6-Item Loneliness Survey

Medical Record Retriever Concept

Prior to office visit (OV) patient helps get specialist visit data to PCP, either by:

- *Alexa* telling Patient which Specialist's records are missing & asking patient to contact specialist office to have them sent to PCP
- *Alexa* telling Patient which Specialist's records are missing & after getting approval from the patient, *Alexa* retrieves specialist records for PCP

Could be integrated with the Office Visit Prepper

During Visit

Office Visit Prepper – Results In EHR

Alexa Skill - Office Visit Prepper - EMR Page For Patient: Bob Smith

Goals			Barriers	
Goal	**Target Date**	**Confidence to Attain**	**Barrier**	**Confidence to Overcome**
to cruise to Alaska	2020-09-17	4	pain in my right knee	3

De Jong Gierveld 6-Item Loneliness Survey Results

Date Taken	EL1 Answer	EL2 Answer	EL3 Answer	EL Total Score	SL1 Answer	SL2 Answer	SL3 Answer	SL Total Score	Grand Total Score
2019-11-24	No	Yes	No	1	More or less	More or less	Yes	2	3

Loneliness Statements

Emotional Loneliness	Social Loneliness
EL1: I experience a general sense of emptiness.	SL1: There are plenty of people I can rely on when I have problems.
EL2: I miss having people around me.	SL2: There are many people I can trust completely.
EL3: I often feel rejected.	SL3: There are enough people I feel close to.

Office Visit Scribe Translate Concept

During an office visit (OV) the physician tells Alexa what should be entered in the EHR in language the patient can understand, and Alexa translates it as appropriate for the EHR

For example, physician would say "normal complete eye exam" & Scribe Translate would enter "EOM & PERRLA intact, sclerae clear, fundi benign" into the EHR

In the note for the patient, the physician's words would be entered in English rather than Medicalese

Zebra Finder Concept

During an office visit (OV) with a Patient who has been difficult to diagnose, **_Alexa_** would guide the Provider in examination & testing, assisted by AI

Post Procedure Visit

Post Procedure – Prototype My Follow Up Care

To provide a vocal interface for patients in addition to the usual printed post-procedure instructions

Will allow for variations among Providers Instructions for each procedure will be grouped by common components/categories, such as:
- Activity
- Bathing
- Diet
- Medications
- Wound Care

Instructions will be time-specific as measured by days from procedure date

Components

Web/EMR-based application to enter post-procedure instructions by or on behalf of the practice

MySQL database to host the necessary tables

Alexa Skill to allow Users/Patients to access their instructions

Web-Based Application

Written to interface with a database (My prototype used php & mySQL)

To be used by Practice or Service Provider to enter instructions by component & with a day start to day end range compared to procedure date

Will allow individual Providers to make variations to a set of instructions

Will provide a three-component code identifying procedure, instruction variation & Provider to be given by Practice to the Patient after the procedure. Ideally, this will be printed on the printed post-procedure instructions.

Practice Portal

THROUGH THIS THE PRACTICE OR SERVICE PROVIDER CAN INTERFACE WITH THE SUPPORTING MYSQL DATABASE

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Alexa Skill - My Follow Up Care - Practice Portal

This portal is designed to enable the practice to manage the information necessary for the My Follow Up Care Alexa skill to be used by their patients.

With it the practice can:

- Add Participating Physicians

- Add the Procedures for which they wish to provide Post-Procedure Instructions

- Create Post-Procedure Instructions organized by component of care

- Create the three part Procedure Instruction Physician (PIP) Code that their patients will use with the Alexa My Follow Up Care skill

PHYSICIANS ===>	View/Edit Physician List	Add Physicians
PROCEDURES ===>	Add A Procedure	
INSTRUCTIONS ===>	View/Edit Procedure Instructions	Add Post-Procedure Instruction
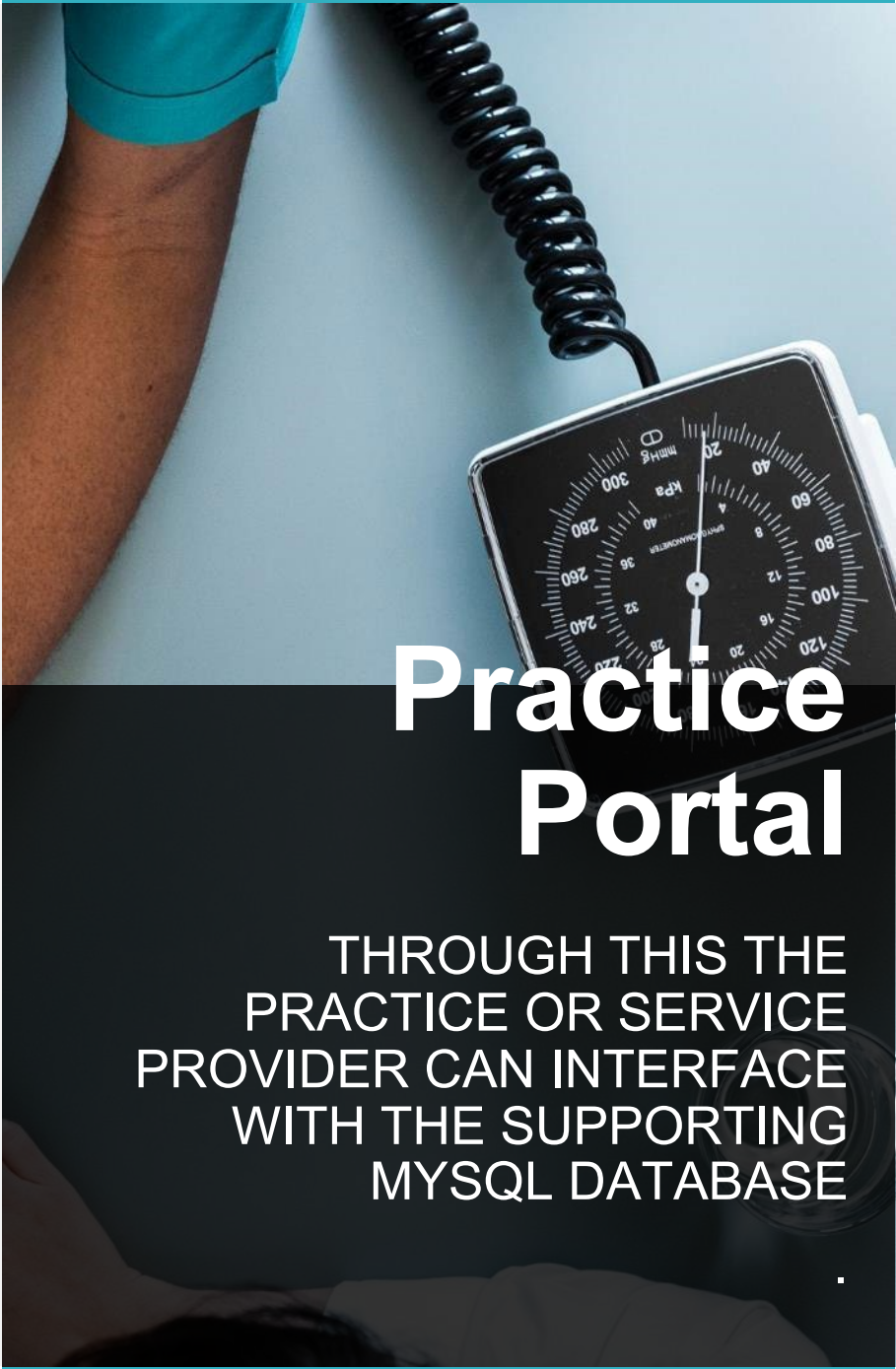
Alexa Skill

Enables user to register by stating the code given by the Provider post-procedure, their first name & the date of their procedure

After registration, the user can ask for instructions either:

- With all instruction components for a requested date, or
- For a specific instruction component & date requested

Your Instructions For Thursday April 26th

My Follow Up Care

Here are your instructions at 3 days since your procedure using a Target Date of Thursday April 26th.

Regarding Activity - DO NOT rub or squeeze your eyes. Avoid eye make-up. Avoid dusty and dirty environments, No swimming or sports. No driving until permitted by your doctor

Regarding Diet - You may resume your usual diet

Regarding Meds Post Procedure - Use Pred Forte 4 times during the day. Zymaxid 4 times during the day. Restasis or Xiidra 2 times during the day. Artificial Tears every half hour while awake. Use Celluvisc before sleeping. In addition, you should use the following for 3 months post-operatively, Artificial Tears, Restasis or Xiidra, Multivitamins and an Omega 3 Fatty Acid Supplement.

Regarding Routine Meds - Take routine medications as usual.

and Regarding Wound Care - Plastic eye shields are to be taped over your eyes anytime you sleep for one week. Please use the medical tape provided by your physician.

More ⌄

All Instruction Components

Example of instructions spoken by *Alexa* & on the *Alexa* App for a requested date 3 days after LASIK surgery

Skill Responses By Follow Up Care – 3 Days Post LASIK

1. Regarding Activity - DO NOT rub or squeeze your eyes. Avoid eye make-up. Avoid dusty and dirty environments. No swimming or sports. No driving until permitted by your doctor

2. Regarding Diet – You may resume your usual diet

3. Regarding Meds Post Procedure – Use Pred Forte 4 times during the day. Zymaxid 4 times during the day. Restasis or Xiidra 2 times during the day. Artificial Tears every half hour while awake. Use Celluvisc before sleeping. In addition, you should use the following for 3 months post-operatively, Artificial Tears, Restasis or Xiidra, Multivitamins and an Omega 3 Fatty Acid Supplement

4. Regarding Routine Meds – Take routine medications as usual

5. Regarding Wound Care – Plastic eye shields are to be taped over your eyes anytime you sleep for one week. Please use the medical tape provided by your physician

Chronic Care Coach Concept

To help the most vulnerable Patients manage their Chronic Conditions using *Alexa* as a Chronic Care coach

Patients identified through predictive modeling with approval of managing Provider to work with the Care Team

Issue identification & solution in care dimensions of:
- Medication Adherence
- Appointment Adherence
- Self-Management

Patients invited to use the skill to serve as a bridge between active Care Coaching & self-care

Capability of reaching more patients by Care Team

Dependencies

Implementation of these ideas would require:
- Access to EMR/EHR database
- Development of EMR/EHR page by vendors
- Input from practice
- Implementation by medical practice
- Access to a Health Information Network (HIN)

Questions???

Thank You

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