



Medical devices can talk.  
Will you listen?

# Of canaries, coal mines, medical devices, and the escalating cost of care



## An invisible problem

### In coal mines

Blasting to expose coal seams created odorless, invisible – and fatal – carbon monoxide, which accumulated in mine shafts. **Thousands died** from CO poisoning for want of a viable practical, cost-effective sensor.



Undercutting a coal seam

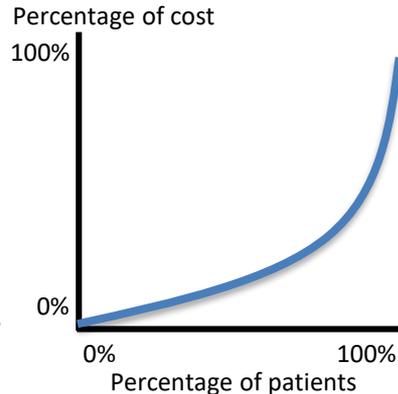
## A novel solution



Canaries were used in British coal mines until 1986.

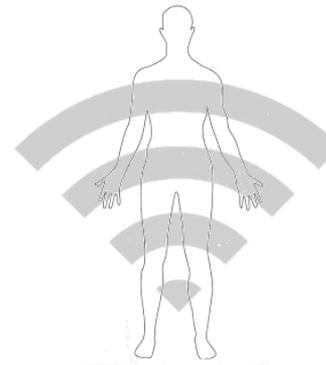
### In medical devices

We can't monitor recovery properly. Too many patients have lingering complications, and a small percentage incurs the majority of total cost. We cannot identify these patients until it is too late. **They are the carbon monoxide of healthcare.**



John Scott Haldane showed that canaries are sensitive to CO at concentrations that are not dangerous to humans. **The birds' behaviors alerted miners** to withdraw and ventilate areas flooded with CO.

Canary Medical's sensors can be integrated into implantable devices. The resulting multi-year data improves outcomes and lowers cost by improving compliance and the early identification of adverse events. **Canary is to healthcare what the canary was to the coal miner.**



# Executive summary: The case for Canary



**The key to better surgical outcomes and lower cost is better data on patient progress.**

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- **Prevention:** Data on patient compliance enables targeted, more effective interventions to increase adherence, and to adapt treatment. This prevents adverse events, reduces the term of professional support, and improves patient outcomes.
- **Detection:** Adverse events detected symptomatically require costly remediation. Early identification of sub-clinical conditions allows timely, less costly re-interventions.

*but*

**Existing solutions are unable to deliver the data required, or to make it useful.**

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- Wearable devices are often seen as a low-cost and easily implemented technology that can generate the early-warning data required.
- However, studies show that wearables are fundamentally limited, and cannot deliver the data required:
  - The sensors are not accurate or precise enough for early detection; and
  - People don't wear them reliably, or over long periods, so the data are not available.

*therefore*

**Canary's built technology to generate useful data and a business model to make data actionable.**

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- Canary's sensors can be embedded in existing implantable medical devices, and generate clinically relevant data for up to 20 years.
- Because patients don't have to wear Canary's sensors, they deliver the right data at the right time to the right constituency, for the life of the device.
- Using newly-released CMS codes for remote monitoring, Canary's business model is economically attractive to Canary, doctors and medical device companies.

# Canary Medical: Our foundational business model



## We design and manufacture proprietary implantable sensors

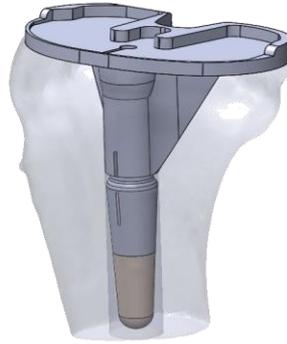
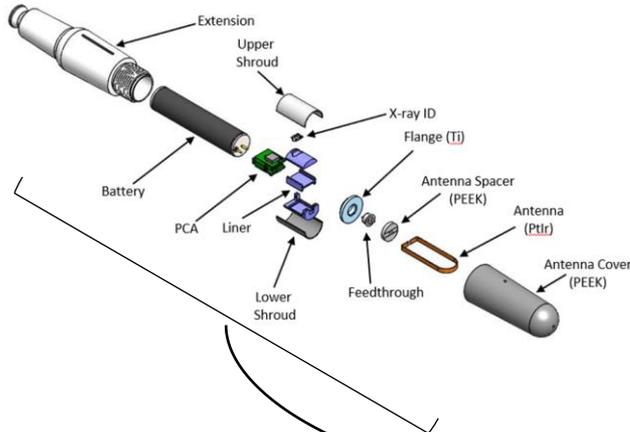
- We measure physiological parameters:
  - Position and motion; pressure and flow
- That have clinical implications:
  - Movement & ROM; stenosis & leakage
  - Recovery and function.

## We sell the sensors to leading device and drug companies

- Embedded in existing devices:
  - Prosthetic joints (e.g., knees);
  - Vascular (e.g., stents, bypass);
  - Trauma (e.g., screws);
  - Respiratory (e.g., inhalers).
- Nothing to wear, charge, forget

## We sell reimbursable analysis and data management services to clinicians

- We sell data services to clinicians:
  - Analyze the data;
  - Generate reports.
- The clinicians bill insurers:
  - Established billing codes (US);
  - Better outcomes, lower costs.



## What we do

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- **Technology:** Design and manufacture sensors that capture clinically relevant data on patient physiology.
- **Data:** Management and analysis services to the healthcare ecosystem (e.g., clinicians, device companies, insurers, patients).

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**Only medical technology can generate medical data.**

## How we make money

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- **Products:** Supplying sensor modules to medical device companies.
- **Services:** Initially, data services to clinicians, who pay Canary with a portion of reimbursement revenue. Eventually, freemium services to patients, and data management services to device companies, insurers, and hospital groups.

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**Break even on the technology.  
Make money on the data.**

## Why we'll succeed

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- **Value creation:** Sensors generate data that meet insurers' billing requirements.
- **100% Patient Compliance:** Devices passively collect and transmit patient data
- **Adoption:** Clinicians get reimbursed, so they prescribe sensor-enabled devices, driving support from device companies.
- **Value capture:** Proprietary system, with high barriers to entry. This allows us to insist on a key role in data monetization.

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**Technology is the lynchpin.  
Pay the doctors first.**

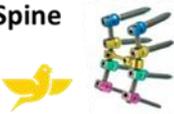
# Scalability: Canary's proprietary, modular technology platform



## Commercialization strategy

*Partnership*

*Proprietary*

	<i>Partnership</i>	<i>Proprietary</i>
<i>Integrated or Embedded</i>	<p><b>Total Joint Arthroplasty</b></p> 	<p><b>Trauma</b></p> 
<b>Technology strategy</b>	<p><b>Interventional Vascular</b></p> 	<p><b>Spine</b></p> 
	<p><b>Aesthetic Implants</b></p> 	
<i>Stand-alone</i>	<p><b>Respiratory</b></p> 	<p><b>Vascular Surgery</b></p> 

## Technology modules:

- **Physiologic sensors:** Accelerometers, gyroscope, pressure, flow, step count, etc.
- **Power supply:** Pacemaker battery.
- **Data transmission:** Secure near-field connection to a base station, with secure wi-fi or cellular upload to the cloud.

## Nothing for the patient to:

- **Wear:** Sensors are an integral part of an implanted or habitually used device.
- **Charge:** Integrated, long-lasting battery.
- **Forget:** Data are gathered as part of everyday activities, making no additional demands on the patient.

# Operating model: Canary holds the regulatory filing



- 510K filing held by **Canary Medical**
- All functionality developed in collaboration with Development Partner



The "talking knee"

Base station

- Reimbursement-compliant data
- On-demand data for clinicians

Data management and analytics



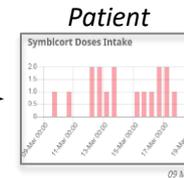
- Regulatory-compliant cloud infrastructure

Online interfaces



- Reimbursement-compliant reports
- Billing support
- Audit trail

Clinician



- Freemium services

Patient



- Co-developed
- Partner branded

Development Partner



- Co-developed
- Partner branded

Mobile apps

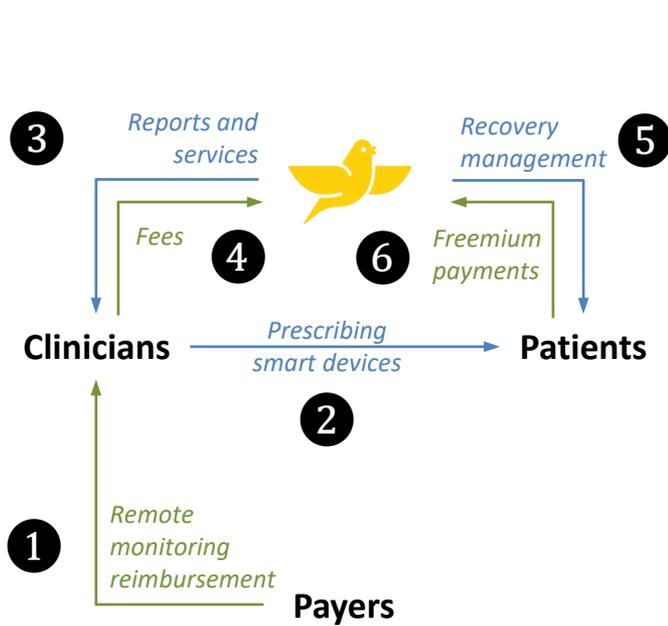


Home

Pop-Ups

- Subjective experience data
- Send alerts
- Direct-connect to cloud

# Business model: RPM revenue gets the ball rolling

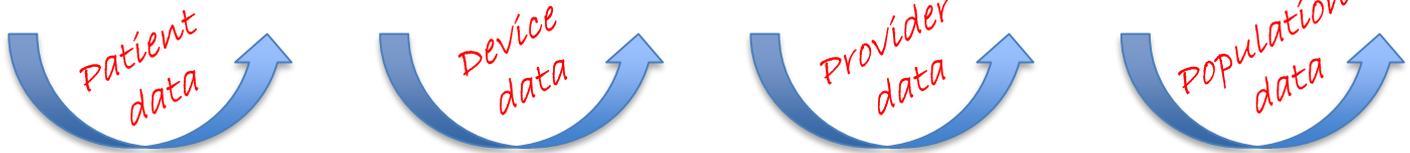


- 1** In April 2019, the Center for Medicaid and Medicare Services (CMS) promulgated Remote Patient Monitoring (RPM) codes that specify the type of data to be collected and how it must be analyzed to qualify for reimbursement.
- 2** Now that clinicians can get paid, they will prescribe devices that collect the requisite data.
- 3** Devices will generate data that are transmitted to Canary and processed into the reports and supporting services clinicians require in order to claim reimbursement.
- 4** Clinicians will purchase the services they require from Canary.
- 5** Canary will provide recovery management services to patients on a freemium basis.
- 6** Patients will pay Canary for freemium services.

# Clinician adoption drives subsequent revenue opportunities



<u>Physician</u>	<u>Patient</u>	<u>Device maker</u>	<u>Hospital</u>	<u>Insurer</u>
<b>Improve economics</b> <ul style="list-style-type: none"><li>• Reimbursable reports on patient progress.</li><li>• Practice management.</li><li>• Advertising.</li><li>• Data management</li></ul>	<b>Improve recovery</b> <ul style="list-style-type: none"><li>• Personal and benchmarking data.</li><li>• Advertising.</li></ul>	<b>Improve competitiveness</b> <ul style="list-style-type: none"><li>• Brand-building.</li><li>• Digital platform.</li><li>• R&amp;D and registry.</li><li>• Data management.</li></ul>	<b>Improve efficiency</b> <ul style="list-style-type: none"><li>• Reducing dissatisfaction and adverse events reduces cost.</li><li>• Identify best practices.</li><li>• Data management.</li></ul>	<b>Improve outcomes</b> <ul style="list-style-type: none"><li>• Managed bundled payments</li><li>• Identify best practices.</li><li>• Data management.</li></ul>



**Reimbursement revenue motivates physicians to adopt Canary**

**Physician adoption creates patient data, allowing Canary to offer freemium services**

**Long-term data on device function enables services for device makers**

**Aggregated data on providers and patient populations enable insights of interest to hospitals and insurers**

# Why the world needs Canary Medical

## Medical data are valuable

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- **Outcomes:** Longitudinal data on patient condition allow clinicians to adapt or customize treatment in order to improve patient outcomes.
- **Cost:** Identifying of adverse events at the sub-clinical stage enables timely, less costly re-interventions, reducing overall cost to the healthcare system.

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**Better outcomes.  
Lower cost.**

## But nothing is happening

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- **Technology:** Wearables don't get worn. Typically, sensors don't collect clinically relevant data; e.g., step count vs. step quality (e.g., wearables), or dose dispensing vs. dose administration (e.g., inhalers).
- **Business model:** Existing device makers cannot get paid for generating data, and clinicians cannot get paid for using them.

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**Breakthrough technology.  
Innovative business model.**

## Canary has an answer

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- **Enable value:** Canary's proprietary technology generates data that enable services that are reimbursable by insurers.
- **Share value:** Device companies capture price and share by generating data, clinicians get paid for using data, and all stakeholders share in the revenue from data.

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**Enable reimbursable services.  
Share the money.**