If you are viewing this course as a recorded course after the live webinar, you can use the scroll bar at the bottom of the player window to pause and navigate the course.

This handout is for reference only. Non-essential images have been removed for your convenience. Any links included in the handout are current at the time of the live webinar, but are subject to change and may not be current at a later date.
Assistant Technology Development: From Design to Market

Jayne Knowlton, MS, OT/L
Chief Solutionist, Eve-n-Sol
Doctorate Candidate BU

Overview

- The role of the Rehabilitation Professional

- The iterative path from idea concept to market launch of assistive technology products

- How to integrate user needs into product development

- Business Aspects
Learning Outcomes

- #1. Describe the role of the rehabilitation professional as entrepreneur

- #2. State 3 steps in product development

- #3. State 3 factors considering consumer use or integration into practice

Speaker Disclosure

- The Speaker is the owner of Eve-n-Sol, Inc. and the AquaEve urinal. The speaker does not have any financial participation in the other products or services mentioned in this presentation.
Have you ever....

- Had an individual client’s situation not met by current products on the market?
- Made an item or insightful changes so that the product works for your client?
- Thought about all the individuals who could benefit from the same?

Consider...

- Your skills as an AT professional
  - Do you create new AT or adapt?
  - Could it scale?
  - Could you get it to market?
Case Example

- AquaEve is an example
  - OT
  - Need
  - Product development and Business Model

Entrepreneurship

- 40% approximate product failure rate (Castellion & Markham, 2013).
- Rehabilitation Professional Advantage
- Evidence based information adds quality to our intervention skills.

- Utilizing an iterative, discovery based method can put the new inventor on the path to product launch.
Entrepreneurs

- “One who organizes, manages, and assumes the risks of a business or enterprise.” (Entrepreneur, n.d.).
  - Risk
  - Business

- Intrapreneur
  - System support
  - Financial support

Socialpreneur

- Social impact goal
- Less of a financial goal focus
- Usually a program

(Sastre-Castillo, Peris-Ortiz, Danvila-Del Valle, 2012)
Entrepreneur Traits

- Strong Attributes
- Specific skills, knowledge
- Perseverance
- Positive relationship traits

- Foster
- Imagination
- Creativity
- Innovation

Potential Pathway

- The Center on Knowledge Translation for Technology Transfer (KT4TT)
- A model of rehabilitation product development.
- Foundation of connecting university generated research and industry best practices (Center on KT4TT, 2017).
Network

- Professional associations
- Learn from others
- Team with others
- Other professions: High Tech Rochester

Need to Knowledge Model

- Operational framework for knowledge translation to technology transfer
  - 1) Scientific Research methods generate Conceptual Discovery
  
  - 2) Engineering Development methods generate Prototype Invention
  
  - 3) Industrial Production methods generate Commercial Innovation

(Lane & Flagg, 2009)
Knowledge exchange process

- 1) Knowledge Translation
  - is a process for communicating the value of conceptual discoveries.

- 2) Technology Transfer
  - is a means for shifting ownership and control over prototype inventions.

- 3) Commercial Transactions
  - confers ownership of finished goods/services to users, in exchange for monetary compensation.

Initial Concept Ideation: Define the problem

- Identification and verification of an unmet need
- My experience
- Personal
- Professional
- Nurse feedback
- Bedside practice
- Specialty rounding team
- Evidence needed
Option in Hospitals, SNFs

Bedpan

“Millie” by Viscot

Initial Concept Ideation

- The evidence
- The need
- Mary Fader et al. (1999): one multicenter assessment
- Tinnion & Jowitt (2000): pump prototype
- Macaulay et al. (2007): urinals can be difficult
Define the problem

- Similar products on the market
- Product comparison chart
- Impact of current status: bedpans, diapers, indwelling catheters

Resource:
Conducting a Competing Product Search Case Example & Step-by-Step Guide. A guide for grantees and inventors developing products and apps


Initial Concept Ideation: Scoping

- Impact and influence of unmet need
- Potential impact of the product
- Know your customer
- Value
- What they will pay
- Stakeholders
Scoping

- Standard of care
- Culture
- Regulation

Potential Impact

- Staff for micturition
- Hospital acquired infection
- UTI
- ICAD
- Patient satisfaction
- Higher discharge independence
- Reduce cost of care
- Falls
Potential Impact: Client Benefits

- Humility
- Waiting
- UTI and skin irritations
- Pain and fatigue
- Enjoy above benefits as men using urinal

Market Opportunity

<table>
<thead>
<tr>
<th>% of US population</th>
<th>Now</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obesity</td>
<td>2012 4.3% 13.5 Million people</td>
<td>2018 5.0% 16.4 Million people</td>
</tr>
<tr>
<td>Aging</td>
<td>2009: 39.6 Million people</td>
<td>2013 72.1 Million people</td>
</tr>
<tr>
<td>ADL* assistive devices</td>
<td>2012 32.6% of market 4,070 Million people</td>
<td>2018 33.7% of market 44,088.2 Million people</td>
</tr>
</tbody>
</table>

National Center for Health Statistics (2012)
Market Research

- Searching and Documenting the Competition
  - Is there a product that solves the problem?
  - Does your idea add value?

1. Define the topic of your search
2. Explore the internet
3. Search catalogs
4. Visit local stores
5. Talk to potential users
6. Pulling it all together

https://sphhp.buffalo.edu/content/dam/sphhp/cat/kit4tt/pdf/pm-inventors-guide.pdf

---

Female Urinals

Millie Universal urinal by Viscot Medical
http://www.viscot.com/201000-L-01

Feminal Female Urinal,
http://www.incontinenceproductsplus.com/Feminal-Female-Urinal-p16000a.htm

Advantage urinal systems,
https://www.advantageurinal.com/

1/ CASE
<table>
<thead>
<tr>
<th>Features</th>
<th>Ideal Product</th>
<th>Male by Viscol</th>
<th>Feminal</th>
<th>Advantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>8’ x 5”</td>
<td>11-1/2” x 4”</td>
<td>Not found</td>
<td></td>
</tr>
<tr>
<td>Volume</td>
<td>500ml &gt;16 oz</td>
<td>1000 cc, 34 oz.</td>
<td>4 cups 1 Quart</td>
<td></td>
</tr>
<tr>
<td>Tactile hand holds</td>
<td>Yes</td>
<td>No, depends on handle</td>
<td>Yes, for 2 handed sale grasp. Protuberances - 2 hands on the side of the urinal.</td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td></td>
<td></td>
<td>Depends on handle.</td>
<td></td>
</tr>
<tr>
<td>Useful in bed?</td>
<td>Yes</td>
<td>No. Neck curves so that initial urine space can fill but then liquid would need to flow up against gravity to reach the body of the urinal.</td>
<td>Yes, under some conditions. Too tall and inlet negative slope need tilt.</td>
<td>Yes for single use.</td>
</tr>
</tbody>
</table>

(Knowlton, 2017)

---

**Product Development**

- Stakeholder Input
- End user
- Focus groups
- Surveys
- Beta testing
Product Development

- Outside Expert
- **** NDA
- Engineering
- Product Designer
- CAD
- Manufacturing

Product Development

- Prototyping options
  - Mock-up
  - 3-D printing
  - CNC
  - Short run manufacturing
Design Elements

- Factors to consider
  - ease of use
  - differentiation from current practice
  - cost of change
  - market timing
To patent or not to patent

- Patent applications
- United States Patent and Trademark Office
- New and useful
- Follows the extensive USPTO rules
- Term of 20 years
- Exclusive property rights to the use of your idea
To patent or not to patent

- Patent attorney or agent
- Viability
- Prior art
- Appeal

Traditional Business Model

- Small business startup
  - On the side
  - All in
- Funding
  - Venture Capitol
  - Bootstrap
- Goal
  - License product
  - Sell business
  - Lifestyle business
Stages of a Business

- Infancy
  - Proof of concept
  - Production
  - Launch
- Growth
  - Sales
  - Marketing
- Maturity
  - Customer development
  - Stable base
- Exit or lifestyle

Business Model

Product Cost & Profit

- Estimated Cost of Materials: $4
- Contract Manufacturing: 30% + $1.20
- Life Style Steps: 30% + $6.76
- Gross Revenue (sale price – cost of goods sold)
- Overhead/Expenses: 30% could be 50% initially
- Marketing advertising
- Profit: $1.00
- Price of the product: $10.10
Product Launch

**Awareness**
- Conferences
- Advertisement
- News
- Word of mouth
- Networking

---

Product Launch

- Home catalogs
- Amazon
  - User-generated reviews
  - Image formation
  - Positive brand identification
  - AquaEve negative user feedback on the cap
Sales Funnel

Summary

- Idea concept verification
- Verification of need
- Verification of market
  - End users
  - Competition
- Opportunity
Summary

- Product Development
  - Prototyping options
- Design Elements
  - Factors to consider
- Integration of user needs
  - Best solicited early
  - Heed or fail
- Business model, plan, goals

Learning

- Rehabilitation professional as entrepreneur
- Steps in product development
- Consumer use and integration into practice
Thank you for Attending!

Time for Your Questions

Jayneknowlton@gmail.com
(585) 749-8386

References