1. To list the challenges and opportunities that telehealth present for health care systems
2. To describe the process of evaluating and implementing telehealth programs
UW Medicine’s mission is to improve the health of the public by:

• Advancing medical knowledge
• Providing outstanding primary and specialty care to the people of the region
• Preparing tomorrow’s physicians, scientists and other health professionals

By the Numbers:
• 26,000 employees
• School of Medicine serves 4,539 students and trainees
• 64,000 admissions annually to the four hospitals
• 1.3 million outpatient & emergency dept. visits

UW Medicine Overview

Entities:
• Harborview Medical Center
• Northwest Hospital & Medical Center
• UW Medical Center
• Valley Medical Center
• UW Neighborhood Clinics
• UW School of Medicine
• UW Physicians
• Airlift Northwest

Rural Community Engagement

Highlights:
• Rural/Underserved Opportunities Program (RUOP)
• School of Medicine focused on rural health, ranking No. 1 in rural medicine.
• MEDCON Education & Referral Service
• Telehealth
Challenges to health care in Pacific Northwest

- One Level 1 trauma center for 5 states: 3 time zones, 2,000 miles
- One allopathic medical school for 5 states
- Payment for specialty services uncertain
- Lost time from work and family
- Uncoordinated care
- Cultural differences
## WHAT IS TELEHEALTH?

### Defining “Telehealth”

The use of medical information exchanged from one site to another via electronic communications to improve a patient’s clinical health status.

- American Telemedicine Association

### Why invest in telehealth?

<table>
<thead>
<tr>
<th>Use Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis and Treatment</td>
</tr>
<tr>
<td>Professional Consultation</td>
</tr>
<tr>
<td>Monitoring and Care Coordination</td>
</tr>
</tbody>
</table>

### What are the applications?

<table>
<thead>
<tr>
<th>Modalities</th>
<th>Platforms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real-time Virtual Visits</td>
<td>Telephonic</td>
</tr>
<tr>
<td>Remote Patient Monitoring</td>
<td>Mobile</td>
</tr>
<tr>
<td>Asynchronous Store-and-Forward</td>
<td>Kiosk</td>
</tr>
<tr>
<td>Bluetooth-Enabled Peripheral Devices</td>
<td></td>
</tr>
</tbody>
</table>
DIFFERENT METHODS OF TELEHEALTH

1. Live, face-to-face consultation

2. Store and forward

3. Remote monitoring

4. Case-based teleconferencing
WHY INVEST IN TELEHEALTH?

Telehealth is a rapidly growing health care delivery model that will enable UW Medicine to further its mission by improving access & increasing strategic outreach. The key question isn’t will telehealth grow, but how fast?

What is Driving Growth?

✓ Current healthcare capacity is insufficient to meet patient needs - the demographics and health of the US population is forcing health care systems to find ways to expand provider capacity & reach.

✓ Consumer preferences are shifting - patients are beginning to favor accessibility over type of interaction, are increasingly demand convenient “on demand” access & becoming more technology-adapt & price sensitive.

✓ Reimbursement of virtual care is shifting quickly, in particular within Washington state.

✓ Technology advancements enable - IT infrastructure is improving, telehealth equipment is becoming more advanced & data management systems have the needed capabilities such as reporting, data mapping, etc.
TELEMEDICINE PATIENT CONSULTATIONS

- TeleBurns
- Maternal Fetal Medicine
- TelePsychiatry
- TeleStroke
Launched in 2015 UW Medicine’s Tele-Burn program has three key components: telehealth clinic follow-up, tele-consultation with Valley Medical Center & tele-rounding for burn wound rounds on Harborview Medical Center’s acute care ward.

<table>
<thead>
<tr>
<th>Business Case</th>
<th>Need to Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Highest Quality of Burn Care &amp; Outcomes</td>
<td>✓ 152 Tele-Video Consults to Date</td>
</tr>
<tr>
<td>✓ Increase Referrals &amp; Partnerships</td>
<td>✓ 528 Clinic Follow-Up Appointments to Date</td>
</tr>
<tr>
<td>✓ Revenue Source</td>
<td>✓ FY17 Goals: Expansion to neighboring hospitals</td>
</tr>
<tr>
<td>✓ Optimize Resource Utilization</td>
<td></td>
</tr>
</tbody>
</table>
VIRTUAL CLINIC: TELE-URGENT CARE
UW Medicine Virtual Clinic

Under pressure? Get treatment for allergies or sinusitis.

We can diagnose allergy and sinusitis symptoms that require further treatment. All from the comfort of your home or office. Prescriptions available.

First time visiting?
Learn how expert medical care is delivered by the UW Medicine Virtual Clinic providers.

Request Care Now
No appointment needed. You will typically be contacted within 30 minutes and often in less than 15.

Receive Care 24/7 from your Phone or Webcam
We can write a prescription for you if it is appropriate. We will provide a summary of your visit via email and make arrangements for follow-up if it is required. We can even help you find a new doctor.

Each visit costs $35. We accept most major credit cards and now we can bill some insurance plans directly. Typically, the virtual visit fee is a qualified expense for a Flexible Spending Account (FSA), Health Savings Account (HSA), or Health Reimbursement Account (HRA). There are no hidden fees. If we refer you to in-person care within 3 months, you won’t be charged.

FAQ
Aligning the Patient & the Health System

- **In-Person Care**
- **Virtual Care**
- ** Requests Referral**
- **Requests Virtual Visit**
- **Provided Personal Information & Chief Complaint**
- **Treated Definitely**: Treated record to provider, Patient satisfaction survey
ECONSULTS & SMART REFERRALS

PCP Structured Referral → Smart Referral → Scheduling → Specialist Office Visit

If too complex, specialist converts to a standard referral

• 3-business-day response
Search for "econ" to view the full list of specialties offering eConsults.
I am requesting an eConsult from Endocrinology for my 65 y.o. female patient with thyroid nodule or goiter.

The following results are available: TSH, free T4

Free T4 15 2/4/2014
Thyroid Stimulating Hormone 2.25 2/4/2014

My clinical question: pt has had thyroid nodule for many years. She had FNA in 2002 which was benign. At that time the nodule was described as being 1.5 cm. The ultrasound that was done most recently shows size of 2.2 cm. The nodule is palpable and unchanged by her assessment. The TSH and free T4 are normal. Should she have another FNA? Does she need a follow up ultrasound?

The most current assessment of this problem can be found in the Apex note dated 12/2/2014

If this clinical question is deemed too complex for eConsult, please,

{ECONSULT FOLLOW UP:1100000002}
<table>
<thead>
<tr>
<th>Patient Population</th>
<th>Adult patients seen by a PCP at UW Medicine</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Patients should be new to the specialty (not seen in past 2 years)</td>
</tr>
</tbody>
</table>

| Launch             | Endocrine, Hematology and Dermatology launched July 2016 |

<table>
<thead>
<tr>
<th>PCPs &amp; Specialists</th>
<th>Overwhelming provider support for eConsult</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Over 1,500 eConsults completed to-date</td>
</tr>
<tr>
<td></td>
<td>Specialist responses submitted within 72 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Program Expansion</th>
<th>Launching nine additional specialties Sept 2017 – July 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>– Gastroenterology, Hepatology, Pulmonology, Cardiology, Rheumatology, Nephrology, Infectious Disease, Neurology, Urology</td>
</tr>
<tr>
<td>TOP DIAGNOSES</td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td></td>
</tr>
<tr>
<td><strong>Dermatology</strong></td>
<td><strong>Endocrinology</strong></td>
</tr>
<tr>
<td>• Seborrheic Keratosis</td>
<td>• Thyroid Nodule/Mass</td>
</tr>
<tr>
<td>• Rash</td>
<td>• Osteoporosis</td>
</tr>
<tr>
<td>• Neoplasm (unspecified)</td>
<td>• Hyperthyroidism</td>
</tr>
<tr>
<td></td>
<td>• Hypothyroidism</td>
</tr>
</tbody>
</table>
PCP Comments

“I was impressed with the turn around time and detailed recommendation and rationale.”

“I was very pleased with the rapid turnaround re: my question; helped me to figure out the next step in my patient’s treatment.”

“I’ve done several other eConsults with endocrine too. I enjoy doing more of the work up to figure out what might be going on vs. just referring the patient to specialty, as was the case in this scenario.”

“More eConsults please! Would love to be able to do this for other specialties.”

Specialist Comments:

“I received two eConsults on Friday and five eConsults yesterday, and the process worked well. I received three thank you notes from referring physicians.”

“Some of the consult questions are quite complicated and it definitely takes time to craft a reply.”

“Both patients had lesions of concern that were rapidly evaluated by an expert who provided evaluation and recommendations. Both were cared for in their primary care clinics, removing the need for the patient to travel to the dermatology office for biopsy. Both were successfully and appropriately treated very quickly after the pathology results were finalized.”
### PCP Survey: In the absence of an eConsult option, what would you have done?

(N = 44)

<table>
<thead>
<tr>
<th>Option</th>
<th>% Converted to F2F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact specialist by pager/phone</td>
<td>5%</td>
</tr>
<tr>
<td>Order a standard referral</td>
<td>66%</td>
</tr>
<tr>
<td>Contact specialist via inbasket messaging</td>
<td>6.7%</td>
</tr>
<tr>
<td>Search medical reference/clinical guidelines</td>
<td>10%</td>
</tr>
</tbody>
</table>

**Specialty**

- Dermatology: 5%
- Endocrinology: 6.7%
- Hematology: 10%

- University of Iowa confirmed similar findings with 62% of PCPs surveyed reporting they would have referred their patient for a face to face visit without the eConsult.

**AVOIDANCE OF SPECIALTY F2F VISITS**

**July 2016 - February 2017**
BENEFITS OF ECONSULTS

Better Quality/Efficiency
• More effective & efficient than “curbside consult”
• Effective triage of patients that need F2F appointment
• Effective new patient visit if F2F appointment is needed because indicated labs and tests completed/available

Improved Member Experience
• Faster & more convenient access for members
• Provide patient-centered care by eliminating need to drive to specialty appointment, take time off of work, etc.

Reduced Cost to Payers
• Eliminates the need for face to face appointment ~94% of the time (data across three specialties for Q3 & Q4 2016)
• Level 4 or 5 visit in person ($250-$300) converted to Effective eConsult ($50-$170)
• No facility fee

eConsult aligned with the Triple Aim
## Patient Access Improvements

<table>
<thead>
<tr>
<th>Telehealth Quarterly Metrics</th>
<th>Baseline</th>
<th>Q1 FY17</th>
<th>Q2 FY17</th>
<th>Q3 FY17</th>
</tr>
</thead>
<tbody>
<tr>
<td>% No Shows: Dermatology</td>
<td>3.75%</td>
<td>2.42%</td>
<td>2.03%</td>
<td>1.01%</td>
</tr>
<tr>
<td>% No Shows: Benign Hematology</td>
<td>7.46%</td>
<td>6.47%</td>
<td>7.31%</td>
<td>3.20%</td>
</tr>
<tr>
<td>% No Shows: Endocrinology</td>
<td>5.08%</td>
<td>5.27%</td>
<td>5.20%</td>
<td>2.57%</td>
</tr>
<tr>
<td>Median Wait Time for all Visits (days): Dermatology</td>
<td>50</td>
<td>50</td>
<td>41</td>
<td>24</td>
</tr>
<tr>
<td>Median Wait Time for all Visits (days): Benign Hematology</td>
<td>26</td>
<td>21</td>
<td>17.5</td>
<td>13</td>
</tr>
<tr>
<td>Median Wait Time for all Visits (days): Endocrinology</td>
<td>34</td>
<td>33</td>
<td>30</td>
<td>26</td>
</tr>
<tr>
<td>% Pts seen &lt;=14 days: Dermatology</td>
<td>17.37%</td>
<td>19.22%</td>
<td>22.43%</td>
<td>53.22%</td>
</tr>
<tr>
<td>% Pts seen &lt;=30 days: Dermatology</td>
<td>30.23%</td>
<td>31.76%</td>
<td>40.00%</td>
<td>74.58%</td>
</tr>
<tr>
<td>% Pts seen &lt;=14 days: Benign Hematology</td>
<td>39.13%</td>
<td>35.66%</td>
<td>40.09%</td>
<td>63.72%</td>
</tr>
<tr>
<td>% Pts seen &lt;=30 days: Benign Hematology</td>
<td>51.89%</td>
<td>54.92%</td>
<td>61.64%</td>
<td>80.97%</td>
</tr>
<tr>
<td>% Pts seen &lt;=14 days: Endocrinology</td>
<td>15.45%</td>
<td>20.15%</td>
<td>21.21%</td>
<td>32.98%</td>
</tr>
<tr>
<td>% Pts seen &lt;=30 days: Endocrinology</td>
<td>35.86%</td>
<td>41.44%</td>
<td>45.83%</td>
<td>65.45%</td>
</tr>
</tbody>
</table>
**TeleICU:**

- “Silver Tsunami” and expanding complexity of cases in ICU
- Wide variability in staffing: only 10-20% of hospitals have a trained intensivist
- 26% better ICU mortality; LOS reduced 0.5-3.6 days
- ~90 min less charting time by nursing staff per shift

LOCAL PILOT OF REMOTE MONITORING

PHILIPS

Communication Hub  Weight Scale  BP Monitor  Pulse Ox  ECG/Rhythm Strip Recorder
MOBILE APPS

BiliCam – Jim Stout, Shwetek Patel
mPOWEr – Heather Evans, Bill Lober

https://mpower.cirg.washington.edu/demo/users/login
CHRONIC PROBLEMS

- SpiroDoc for asthma, COPD
- Multiple apps for diabetes management
- Hypertension management
• Crush of data!
• Triage of actionable data
• Reimbursement
• Medico-legal responsibility
PROJECT ECHO: HOW IT WORKS

- 1 telemedicine clinic/week, per discipline
- 10-15 min didactic
- De-identified cases sent in advance
- Primary care physicians present cases to specialist panel
- Multi-specialty co-management
- “Learning Loops”
1) **Use Technology** (multipoint videoconferencing and internet) to leverage scarce healthcare resources.

2) **Case-based learning**: collaborative management of patients with subject matter experts at academic medical centers and centers of excellence.

3) **Disease management model** focused on improving outcomes by reducing variation in processes of care.

4) **Monitor and evaluate outcomes**

Project ECHO Increases Capacity
EVIDENCE SUPPORTING PROJECT ECHO MODEL

Table 2. Sustained Virologic Response According to Genotype and Site of Treatment.*

<table>
<thead>
<tr>
<th>HCV Genotype</th>
<th>ECHO Sites</th>
<th>UNM HCV Clinic</th>
<th>Difference between ECHO Sites and UNM HCV Clinic</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All genotypes</td>
<td>152/261 (58.2%)</td>
<td>84/146 (57.5%)</td>
<td>0.7 (–9.2 to 10.7)</td>
<td>0.89</td>
</tr>
<tr>
<td>Genotype 1</td>
<td>73/147 (49.7%)</td>
<td>38/83 (45.8%)</td>
<td>3.9 (–9.5 to 17.0)</td>
<td>0.57</td>
</tr>
<tr>
<td>Genotype 2 or 3</td>
<td>78/112 (69.6%)</td>
<td>42/59 (71.2%)</td>
<td>–1.5 (–15.2 to 13.3)</td>
<td>0.83</td>
</tr>
</tbody>
</table>

* The rates of sustained virologic response are not reported separately for six patients with genotype 4 or genotype 6. ECHO denotes Extension for Community Healthcare Outcomes, HCV hepatitis C virus, and UNM University of New Mexico.

* More minorities treated in ECHO group


UW Medicine
CLINICIAN CONSULTATIONS

- Project ECHO HCV
- Mountain West AETC Project ECHO HIV
- Psychiatry and Addictions ECHO
- Project ECHO Tuberculosis
- Project ECHO Heart Failure
- Project ECHO Geriatrics
- Project ECHO Dialectical Behavioral Therapy
- Tele-Antibiotic Stewardship ECHO
- Telepain
BARRIERS TO TELEHEALTH EXPANSION

✓ Reimbursement/funding model
✓ Credentialing and licensing
✓ Physician acceptance
✓ Workflow
✓ Technology
✓ Relationship management
Patients: scared by stethoscope, thought it was a surgical instrument

Doctors: would place a barrier between doctor and patient, make the process of interviewing a patient irrelevant
OPPORTUNITIES IN TELEHEALTH

- Transition from a fee for service to value based care model
- Technology is getting MUCH cheaper!
- High broadband and cell coverage
- Customer demand!
- ATA guidelines and maturing of the field
TELEHEALTH ORG CHART

Dave Flum
Associate Medical Director

John Scott
Medical Director Telehealth

Priscilla McGraw
Administrative Assistant

Cynthia Dold
Director Strategic Planning & Integration

Carrie Priebe
Administrator Telehealth

Rande Grey
IT Support - Zoom

Adrian Rodriguez
IT Support – Zoom

Teri Snyder
Internal Consultant Telehealth

Leah Rosengaus
eConsult Program Manager
# TELEHEALTH THE “HOW TO”

## Having a Successful Telehealth Program Isn’t Just Implementing Technology

<table>
<thead>
<tr>
<th>Define System-Wide Strategy</th>
<th>Create A Business Plan</th>
<th>Design Telehealth Programs</th>
<th>Deploy Telehealth Products</th>
<th>Build Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Market Assessment</td>
<td>• Technology Review</td>
<td>• Business Case &amp; Evaluation Criteria</td>
<td>• Pilot/Prototype</td>
<td>• Toolkit Development</td>
</tr>
<tr>
<td>• Financial Analysis</td>
<td>• Business Readiness Assessment</td>
<td>• Use Case Definition &amp; Workflow Mapping</td>
<td>• Technology Configuration &amp; System Integration</td>
<td>• Monitor &amp; Track Progress</td>
</tr>
<tr>
<td>• Strategy &amp; Vision</td>
<td>• Business Plan</td>
<td>• Patient Experience Design</td>
<td>• Project Management</td>
<td></td>
</tr>
<tr>
<td>• Governance Structure &amp; Operating Model</td>
<td>• Provider Compensation &amp; Reimbursement Strategy</td>
<td>• Technology, Regulatory, Billing, Etc. Requirements</td>
<td>• Change Management</td>
<td></td>
</tr>
<tr>
<td>• Roadmap</td>
<td></td>
<td>• Technology Evaluation &amp; Selection</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
INGREDIENTS FOR A SUCCESSFUL PROGRAM

• Integrated into overall strategic planning
• Physician champion
• Positive Return on Investment
• Relatively easy to learn technology
• Solves important clinical need
PRACTICAL TIPS

- Work with marketing and IT early and often
- Create an intake sheet and a decision-making matrix to prioritize projects
- Develop a dashboard for updating leadership regularly on progress
- Physician championship is essential, but also need business planning and operation
- Early stage work should focus on policies, procedures and training
- Build or buy?
- Don’t overspend on technology; use as few platforms as possible (preferably compatible with your EMR)
A WORD ABOUT METRICS

- Clinical outcomes
- Patient, provider and partner satisfaction
- Business outcomes (transfers avoided, $ saved, new patient acquisition)
- Research publications and grant funding
Improve the health of the public

Achieve the “triple aim”:

- Improving the patient experience of care (including quality and satisfaction)
- Improving the health of populations
- Reducing the per capita cost of healthcare