Data Analytics:
Social Determinants of Health

July 23, 2020
Agenda

• Welcome and Introductions
  – Claudia Ellison, Director of Programs and Services, eHI

• Overview of Today’s Topic
  – Al Kinel, President, Strategic Interests, LLC

• Discussion:
  – Amy Salerno, MD, Director of Community Health and Well-Being, University of Virginia
  – Karen Rheuban, MD, Professor of Pediatrics, Senior Associate Dean, University of Virginia, Co-founder of UVA Center for Telehealth, former President of American Telemedicine Association
  – Ruben Amarasingham, MD, Founder and CEO of Pieces Technology

• Next Steps
Workgroup Goals

• This workgroup will identify and share best practices to access and utilize information and analytics to improve care, lower costs, and enhance the care experience.

• Prior Year’s Scope:
  • Traditional Sources and Uses of Data Enabled by Interoperability:
    • Transitions of Care
    • Analytics
    • Clinical and Claims Data
  • Non-Traditional Sources and Uses of Data:
    • Genetic Data
    • Social Determinants of Data
    • Diagnostic Imaging
    • Wearables & Patient Generated Health Data
    • Patient Reported Outcomes
2020 Workgroup Goals

• This workgroup will identify and share best practices to access and utilize SDOH data into a plan of care and interventions for individuals and communities.

• Topics to cover include:
  – Role of HIEs in SDOH data exchange
  – Categories of Data and Coding Schemes
  – Role of Telehealth, Remote Monitoring, and Patient Reported Data
  – How collaboratives align stakeholders to capture and utilize SDOH
  – **Converging Technologies – how they impact and utilize SDOH**
  – IF WE HAVE TIME: Policy and operational issues surrounding surveillance and behavior
Converging HIT
Bringing it Together to Attain Significant Impact

Telehealth
- Virtual Visits
- RPM

Image Exchange

Analytics / AI

SDOH
- Impacting
- Utilizing

Core Technologies

Smartphones
Communications
AI / ML

UVA Health
Data and Technology Enabling Community Impact

Social Determinants of Health

Amy Salerno, MD
University of Virginia

Ruben Amarasingham, MD
Pieces Technology
Charlottesville: SDoH Impacts
COVID – Existing Disparities Worsen

The COVID-19 Struggle In Chicago’s Cook County Jail


No Easy Fixes as Covid-19 Hits Homeless Shelters


'A Terrible Price': The Deadly Racial Disparities of Covid-19 in America

Social Needs of UVA Patients

General Medicine Discharges: Social Needs

- Yes: 48%
- No: 52%

N = 2511

Press Ganey Outpatient: Social Needs

- Yes: 33%
- No: 67%

N = 6559

10.9% Food Insecurity*
6.1% Housing Instability*
4.3% 3.2%

* >2 RR of Non-Emergent ED visits (p< 0.05)
What Can UVA Health Do?

Key Principles Considered as UVA developed strategies

• Ability to address social needs when/where they arise: In Community, not just in the hospital/clinic
• Community Based Organizations are the experts and solutions should empower and enable them to do their work better
• Find solutions that “meet us where we are” and help UVA and the greater community further along in the journey of addressing SDoH.
• Align with broader Health System Strategy: Allow UVA to use data and track patients across their care journey to track social needs and community impact on key Health System metrics such as Readmissions, Length of Stay, Ambulatory Sensitive Admissions, and non-emergent ED visits.
Our Journey

Partnered with the community based organizations
Pieces Technologies

**Pieces Predict**  
(formerly Pieces DS)  
Real-time AI analytics platform that integrates directly into hospital EMRs. NLP surfaces social determinants of health and clinical risk factors from unstructured notes for timely and personalized interventions and care planning.

**Pieces Community Connect**  
(formerly Pieces Iris)  
A fully-linked case management platform that can be used by virtually any community based organization, hospital or clinic. Enables closed loop referrals and care plans that allows health systems to address social determinants of health and community organizations to perform full case management.
Pieces Community Connect: Meeting the needs in the community

- PIECES CONNECT: A FULLY FUNCTIONAL CASE MANAGEMENT SYSTEM FOR OUR COMMUNITY PARTNERS
- SUPPORT COMMUNITY PARTNERS WHO CAN APPLY FOR GRANTS
- AN APPROACH THAT BRINGS VALUE TO ALL OF THE ORGANIZATIONS IN THE COMMUNITY
Meet us where we are: Pieces Predict

Dispo: needs IV AB, final plan for AB therapy pending ID recs, unlikely to self administer & no family support, might need SNF, OPAT team following.
NLP identified Social Needs

Social Vulnerabilities

- Behavioral Health Issues: 37.1%
- Substance Misuse: 32.3%
- Employment Concern: 26.1%
- Transportation Needs: 26.0%
- Financial Concern: 13.9%
- Neglect: 7.9%
- Disability: 7.5%
- Abuse: 6.3%
- Insurance Concern: 5.6%
- Housing Instability: 3.9%
- Social Isolation: 2.4%
- Food Insecurity: 1.9%
- Non-accidental Trauma: 0.6%

Pieces Natural Language Processing (NLP) searched through the clinical notes to identify patients experiencing 13 social and clinical factors that affect patient outcomes.
Meet the Community Where They Are

Interoperability between local community software systems to build on existing community assets. Integration of NW2W and Pieces Community Connect will support workflow and the benefits of this project will result in seamless social service follow-up needs inside and outside UVA.
Aligning with Key Health System Strategies

Social Vulnerability Impact on LOS

<table>
<thead>
<tr>
<th>Number of SDoH (Number of Encounters)</th>
<th>Average LOS</th>
<th>Benchmark LOS</th>
<th>% of Excess LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 (n=2,122)</td>
<td>4.77, 4.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 (n=1,249)</td>
<td>5.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 (n=1,080)</td>
<td>5.30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 (n=828)</td>
<td>5.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 (n=476)</td>
<td>6.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5+ (n=520)</td>
<td>7.44</td>
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Normalized % of Excess LOS: 60.0%

Timeframe: Jan 2020 - May 2020
Tracking Patients Across the Care Journey

UVA Health System
- Patient presents to hospital or clinic
- Clinical & social needs surfaced
- Activate pathways
- Care team makes referrals prior to or at discharge

Charlottesville Community
- Patient referral received at community-based organization
- Did patient make it to CBO for appointment?
- CBO performs end-to-end case management in Pieces Community Connect

Increased ROI through closed-loop monitoring
- Evaluation of Key Measures
- Pieces Predict consultative analytics
Leveraging Existing Infrastructure During COVID to address vulnerable populations

- Acute Social Needs
- NLP evaluation to assess disparities in COVID-19 care
- Community Call Line
- Telehealth – Jails/Prisons/Homeless Shelters
Access to Telehealth – A Critical SDoH for COVID

Broadband usage by county
The map shows the percentage of people who had high-speed internet service at home in each U.S. county in 2018, according to research by Microsoft. Minimum broadband speeds are adequate for video conferencing and video streaming.

Percent of people with high-speed internet service at home

Source: Microsoft (2018)
CARLIE PROCELL/USA TODAY NETWORK
Telemedicine
Lessons learned from a pandemic

Karen S. Rheuban MD
Professor of Pediatrics
Director, UVA Center for Telehealth
Senior Associate Dean for CME

Disclosure:
Dr. Rheuban serves on the advisory board of TytoCare,
and the board of Locus Health
UVA Telehealth

Supports the delivery of patient care, research and education facilitated by communications technologies, including:

• live, interactive telemedicine encounters
• store and forward services
• remote patient monitoring
• clinical videoconferencing for collaborative patient management  (e.g. tumor boards, Project ECHO, cath conference with referring providers)
• eConsults

Telehealth is not a specialty in and of itself.
At UVA, the service is managed centrally and deployed across the enterprise
## Benefits of Telehealth

<table>
<thead>
<tr>
<th>Patients</th>
<th>Health Professionals</th>
<th>Hospitals Systems</th>
<th>Communities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve access to specialty care</td>
<td>Expand reach of providers</td>
<td>Grow strategic partnerships</td>
<td>Improve population health</td>
</tr>
<tr>
<td>Reduce unnecessary travel</td>
<td>Increase workforce expertise and capacity</td>
<td>Improve transfer coordination</td>
<td>Support healthcare facilities</td>
</tr>
<tr>
<td>Meet consumer demand</td>
<td>Facilitate better continuity of care</td>
<td>Fill gaps in specialty coverage</td>
<td>Mitigate workforce shortages</td>
</tr>
</tbody>
</table>
- Health system (including academic) classical hub and spoke models, many also extending to the home
- Veterans Health Administration
- Telemedicine services companies
  - Specialty care, Remote patient monitoring
- Retail and pharmacy clinics
- Workplace clinics
- School based clinics
- Aging in place models
- Project ECHO models
- Direct to consumer models
  - Within systems, payer developed, independent subscription services
• ~ 20,000 patient encounters in Virginia/year
  – Offer services in >60 subspecialties
  – EVERY clinical service line participates
• Telemedicine program is integrated with teleradiology, with documentation in EPIC
• >4500 e-consults
  – Pediatric subspecialties included
• Remote patient monitoring program at home
  – Locus Health partnership; >11,000 patients
• Screening for diabetic retinopathy:
  – 4,475 screenings
  – New AI enabled technologies
• Spared Virginians > 21 million miles of travel
• Emergency (and special pathogen) preparedness
UVA Center for Telehealth: Educational mission

- Undergraduate Medical Education
- Graduate Medical Education
- Continuing Medical Education
  - Project ECHO (including COVID19)
- School of Nursing/ODU NP training programs
- Telehealth Village
- International programs
- Patient education (e.g. Diabetes education)
• MATRC funding from HRSA
• eBACKPAC HRSA school based telehealth program
• Remote care delivery trials of in-person services
• Device research (Remote examination tools, medication compliance models, health-promoting gamification research)
• InnoVAte grant from CDC/VDH
• Improve patient access to clinical trials
• Support faculty in multi-institutional research collaborations
• iTHRIV (CTSA)
• SPROUT Pediatric research network

To date, we have been awarded >$22 million in extramural research funding
HIPAA compliant, interoperable, FDA approved technologies
• Acute stroke intervention
  • Treatment rates = that in our own emergency room
• High Risk Obstetrics
  • Reduction in preterm deliveries, NICU days
• Screening for diabetic retinopathy
  • 70% abnormal
• Remote patient monitoring partnership with Locus Health
  • Readmissions reductions
  • Chronic disease management (adult and pediatric)
  • Transplant patients
  • High risk pregnant women
• Telepsychiatry services (and VMAP)
  • Number 1 request for services;
  • 30% decrease in missed appointments
  • High rates of patient satisfaction
• Diabetes prevention and treatment
  • Expand models of care for diabetes, diabetes prevention and cv risk reduction
• Performance metrics of internal and partner systems
• Press Ganey patient satisfaction tool
2019 Strategic planning

• Improve patient access to care
  – Expand telehealth contracts
  – Develop DTC capability integrated into EPIC
• Improve UVA and referring provider engagement
  – Expand eConsults
  – Expand access to telemedicine services
  – Expand training
• Expand chronic disease management through RPM tools
• Improve transfer management and care coordination
  – Expand ED, hospital and ICU partnerships
  – Expand post-acute services
Who led the digital transformation of your company?

A) CEO
B) CTO
C) COVID-19
Advance pandemic related solutions above and beyond our telemedicine strategic plan across inpatient, outpatient and post-acute settings

- Improve access, triage and better manage patient care
- Reduce patient and provider exposure, conserve PPE
- Backfill both primary care and specialty visits virtually
- UVA Health accelerated the opening of our new bed tower
- Expand training internally and externally
• Established COVID clinics for screening and testing
• Expanded RPM for quarantined patients and those with chronic illness (including hotel for homeless COVID-19 patients)
• Developed workflows to enable the transition of in-clinic visits to virtual, including GME workflows
• Expansion of iSOCOMS special pathogen program
• Rapidly scaled to congregate care settings (LTC), homeless shelter
• Developed a DTC portal to enable urgent care services
• Expand training
  – COVID19 Project Echo, Telehealth Village
  – Training specific to telehealth
• Streamline telemedicine contracting
Public policy changes: Public health emergency

- Medicare: elimination of most restrictions
  - Home became an eligible patient originating site
  - Not just rural
  - Expanded CPT codes
  - Expanded providers
  - Added telephone codes
- Medicaid: similar to Medicare
  - Added RPM for COVID-19 patients
- Relaxation of OCR enforcement of HIPAA
- Relaxation of Stark provisions
- FCC new programs:
  - COVID 19 telehealth program
  - Connected care pilot program
- Licensure: federal and state actions
“All hands on deck”

- Health IT engagement including expansion of our enterprise WebEx agreements and EPIC transformation
  - Creation of a My Chart enabled WebRTC platform
  - Deploy hardware in clinics to support VTC
  - Facilitate BYOD with OCR HIPAA enforcement relaxation
- Engage scheduling teams to ensure all visits integrated with EPIC templates
- Billing team engagement including tracking changes in payment policies
“All hands on deck”

- Expand our telehealth team workforce
- Provide regular communications with our providers including:
  - consent language,
  - smart phrases,
  - billing codes,
  - tip sheets
- Data analytics to track progress
- Survey of our providers
- RFI for enterprise platform
- Engage with federal/state policymakers, and all stakeholders
UVA telemedicine: Where are we now?

Last 3 Months, Running Total Completed Encounters, Telemedicine Daily Volumes
Shows the volume of Epic telemedicine encounters completed this month to-date, scheduled for the remaining days in the month, and completed in prior months.

Graph showing telemedicine encounters by type: Circleback, Contracted Telemedicine Scheduled, DTC Prof Remote Scheduled, DTC Telemedicine Scheduled, Econsult, Other, Virtual Urgent Care.

Telemed Encounters by Type

- March, 2020
- April, 2020
- May, 2020
- June, 2020
- Up to July 8, 2020
UVA telemedicine: April 2020

Zip Code Map
UVA telemedicine: May, 2020
Patient satisfaction

1900 responses to Press Ganey survey regarding UVA telehealth service from April to June, 2020

- 97.5% were likely to recommend their care provider
- 90.1% were likely to recommend our video visit service
- 83.4% were willing to have future telemedicine visits after the COVID quarantine is over
Where are we going from here?
Questions?
Thank you
Next Meeting Date

• Next meeting date: August 26