



Implementing A Novel Electronic Medical Record (EMR) for Street Medicine in Denver



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Introduction

What is "street medicine"?

- Started in 1990s by Dr. Jim Withers and others
- "House calls" to the street and most vulnerable
- Now part of medical programs nationally and globally

Why should we care?

- Average lifespan of unhoused population up to **30 years** less than housed population¹
- Low access to brick-and-mortar health systems

Challenges in Street Medicine^{2,3}:

- Patient continuity and mobility
- Lack of standardized documentation
- Electronic vs. paper medical records



Who we are

CU Street Medicine is a student-run group that:

- Enhances education around healthcare for people experiencing homelessness
- Brings social and medical outreach services to people experiencing homelessness in the Denver Metro Area
- Clinic services include:
 - Routine screenings (i.e. blood pressure, blood glucose)
 - Prescription and referral services
 - Dedicated time with licensed provider
 - Harm reduction, wound care, cold weather supplies

Research Purpose

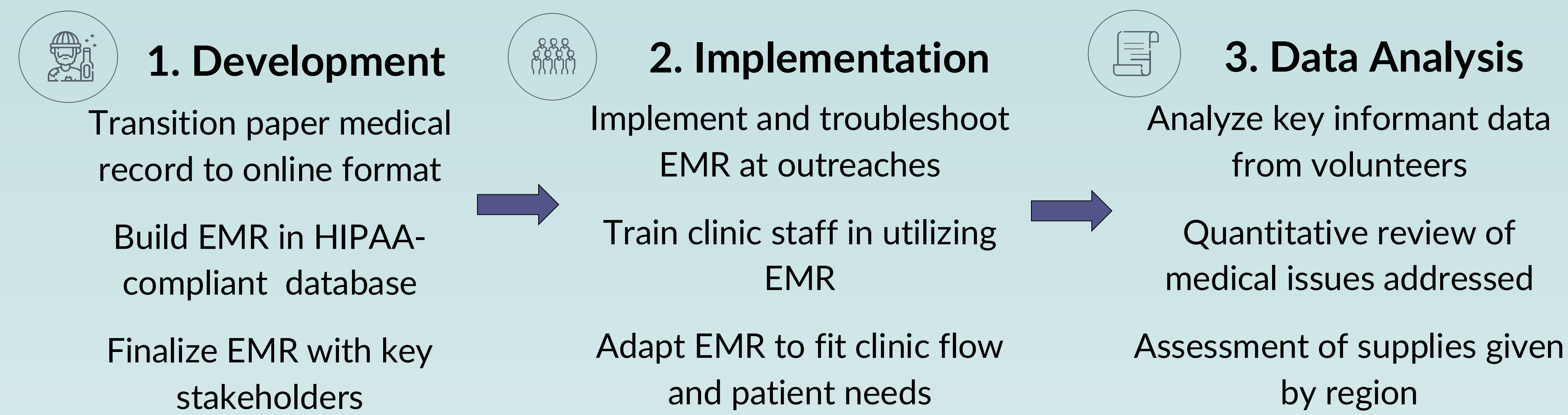
Our current limitations:

- Cumbersome and error-prone paper records
- Limited space on intake forms
- Poor referral and follow-up data

This project will:

- Streamline accurate data collection
- Allow for follow-up on patient data
- Identify needs of patients to improve outreach

Methodology: Project Stages



Initial Pilot Testing

Pilot testing highlighted points of improvement in our EMR system:

- Database in REDCap vs. Google Administrator Spreadsheet
- Data collection methods
- Access to HIPAA-compliant database by volunteers

Transitioning from paper to electronic medical records:

- Blue section = Triage team
- Pink section = Vitals team
- Orange section = Provider / scribe

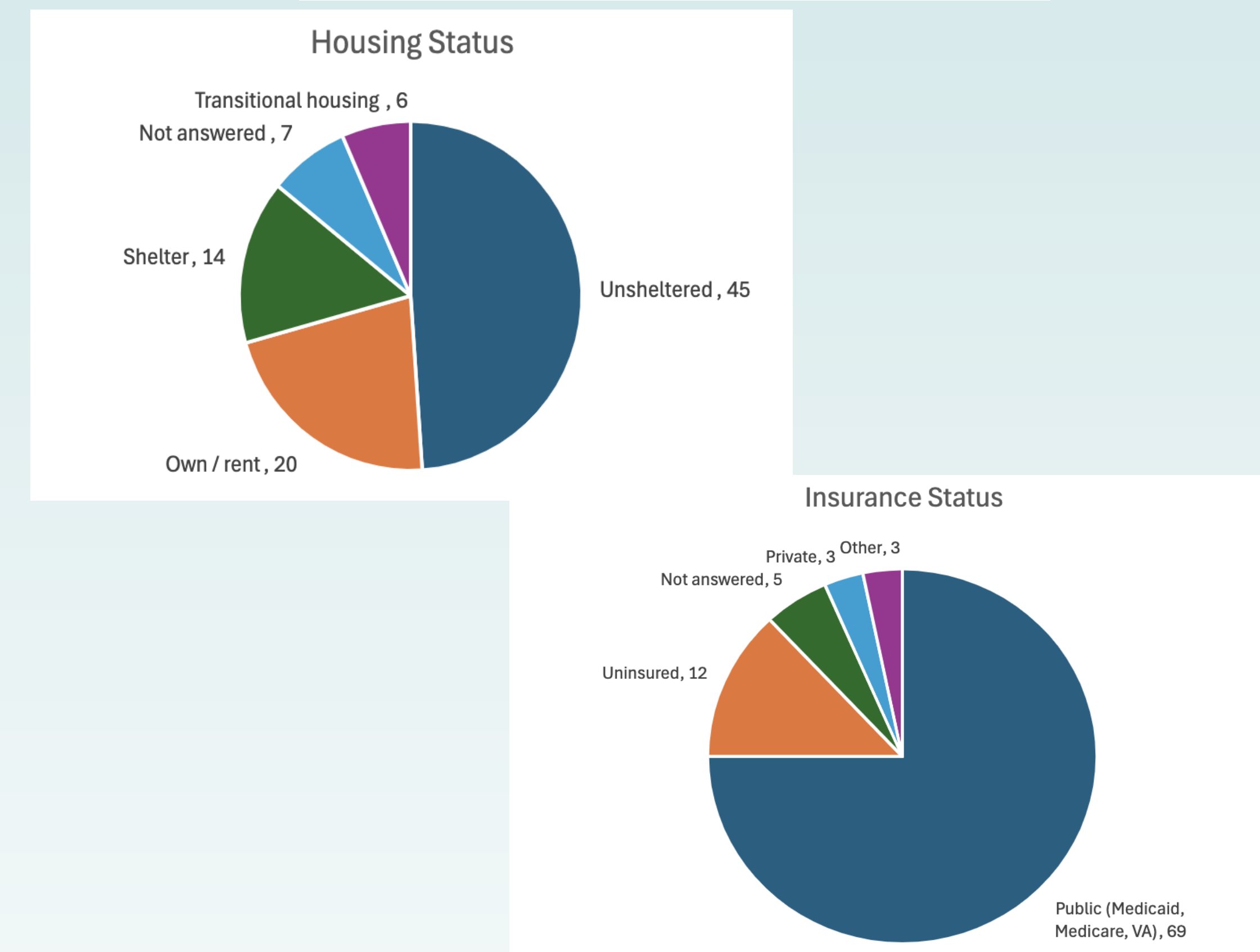
| Patient | | Subjective | | | | Objective | | Assessment / Plan | | | | | | | | | | | | | | |
|------------|------------|------------|--------|--------------------------|-------------------------------------|---|---|---|---|--|-----------------------------------|----------|----------------|---|----|-----------|--|---|--|--|------------------|--------|
| First Name | Last Name | DOB | Gender | Race | Insurance status | Chief Complaint | Last appointment (ie. PCP, dental, ED) | Medical History (including substance use, allergies) | Medications | Living situation | Contact info (if willing to give) | Temp (F) | Blood pressure | Blood sugar (fasting or post-prandial?) | HR | O2 sat | physical exam | Plan & Follow up | Supplies/OTC given | Prescription Given (name/dose/quantity) | LHCP Signature | Photos |
| [Redacted] | [Redacted] | [Redacted] | Man | White | Public program (Medicaid, Medicare) | chronic SOB, COPD, L leg DVT, needs reading glasses | - ED visit few months ago for dog bite on R arm - admitted for 4d last winter for DVT (no PE) | NKDA, COPD (not on home O2), Bronchitis, Alcoholism, 1/2 pack per day | Not taking any - reports he should be taking medication for the DVT but is scared of the side effects | Lives in Empowerment for 1+ year, just resigned lease | [Redacted] | 99.0F | 114/80 | 132 | 93 | 84% RA | 1) normal cardiac exam - no murmurs 2) no crackles, wheezes, or rales, slightly diminished lung sounds 3) Volume Status: no bl/ extremity edema | Given clinic referral to follow-up O2 levels, pt denied referral | Lotion, Bug spray | | Kathryn Boyd, MD | |
| [Redacted] | [Redacted] | [Redacted] | Woman | White | Public program (Medicaid, Medicare) | needs psych meds refil, SOB, COPD, vision concerns, growth on L inner eye "Don't judge me" | last PCP visit in 2022; ED last year Seen at Stout Street? | NKDA, Cirrhosis of alcoholism, COPD, CHF, COPD | Seroquel (50mg), trazadone (not currently taking, wants refills and to restart) | Unhoused, stays in Empowerment with Brian Trullor | [Redacted] | 98.0F | 136/82 | 112 | 99 | 88% on RA | 1) diminished bilateral bases 2) heart sounds normal | 1) signed up for medicaid today 2) 10AM 725H appt at Open + Affordable dental 3) will meet with Sherry on wednesday office hrs for case management help | Melatonin | 1) Seroquel 50mg tablets QD, 30 tablets, 6 refills | Kathryn Boyd, MD | |
| [Redacted] | [Redacted] | [Redacted] | Man | Black / African American | Public program (Medicaid, Medicare) | Needs inhaler for asthma, psych meds refil, severe depression (no current SI), tooth cap fell off | 1) no PCP - urgent care visit - month ago for fall on the back and arm 2) shooting pain down L leg 3) asthma, 20 yr 1/2 pack/day smoker | NKDA, Severe depression with h/o suicidal tendencies (last SI 1 month ago, has attempted, has vague plan but denies current SI), hx of L axillary abscess s/p drainage + abs 1mo ago, Asthma, 20 yr 1/2 pack/day smoker | no current meds, wants to restart meds for depression, look wellbutrin and trazadone (dose unknown) | Lives in Empowerment, orig from south central LA moved out here to be with Dad who deserted him and he became unhoused | [Redacted] | | | | | | 1) Dental visit scheduled for next week 2) abscess in left arm got warm compress no clean cloth given doxy 3) given med refil script Wellbutrin (taken before no SE, no hx of seizures) albuterol, trazadone (taken before no SE) | Bug spray, Melatonin | 1) Wellbutrin 100mg PO BID, 60 tablets, 3 refills 2) Trazadone 150mg PO QHS, 30 tablets, 6 refills 3) Albuterol 90mcg, 2 puffs PRN, 6 refills 4) Doxycycline 100mg PO QD, 30 tablets, 2 refills | Kathryn Boyd, MD | | |

Novel elements of the EMR:

- Spreadsheet capabilities for analysis of patient needs / resource utilization
- Format easily adaptable to organizational growth
- More space for details of medical history and encounter

Preliminary Results

| Chief Concern | Number of Patients |
|---|--------------------|
| Vitals / routine check up | 35 |
| Wound care | 21 |
| Over-the-counter medications / supplies | 17 |
| Acute concerns | 12 |
| Prescription refills | 5 |
| Other | 2 |
| Total Patients | 92 |
| Referrals made | 20 |
| Prescriptions written | 19 |



Conclusions

Street medicine is a needed service in Denver. This EMR shows that primarily for unsheltered individuals, street medicine meets needs for primary care, wound care, and over-the-counter supplies. Our outreach should continue prioritizing these needs, and this EMR will help refine programming as we gather more patient data.

References

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- Harry Laurence Selby Coleman, Liam Levy-Philipp, Elias Balt, Teun Zuiderent-Jerak, Harsh Mander, Joske Bunders & Elena Syurina (2022) Addressing health needs of the homeless in Delhi: Standardising on the issues of Street Medicine practice, Global Public Health, 17:11, 2991-3004.
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