Communication and Information Technology: Improving quality and access to care

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LCHC Telehealth Case Study

- LCHC has used a video calling platform to deliver virtual primary and specialty care, which has **improved their ability to reach their rural patient population.**
- LCHC's SMBP and SMBG programs in addition to video teleconferencing visits, have led to **patient generated data** that is directly integrated into the organization's IT system and **reduced patient burden** to travel long distances for frequent in-person visits.
- Using off-the-shelf Bluetooth-enabled monitoring devices, patients can upload data to the EHR/IT platform between visits, **enabling engagement with their care plan** and promoting cooperation and collaboration with their providers. This is particularly important for diabetes and hypertension control, which requires sustained and lasting behavior changes for improvement
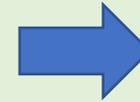
Data integration
Using the right software for the right function

EHR –Replaces paper chart and practice management
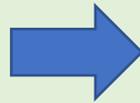
Nightly data upload from EHR

Data warehouse
Population reporting, decision support
Analytic

Pharmacy Access

Care Management (Cloud based)
Clinical data
Patient generated data
Integration

Patient portal
Patient generated data with charts
Education
Communication

Note: Most EHRs are legacy systems structurally designed to store and retrieve individual patient records generated in the office setting. Storing patient generated data (SMBP and SMBG) is always possible, but likely very expensive to achieve. EHRs are not designed to accept or manage patient generated data.

BRINGING CARE TO THE PEOPLE
TECHNOLOGY ELIMINATES GEOGRAPHIC ISOLATION

- *Tele-psychiatry with JABSOM's Department of Psychiatry*
- *Tele-dermatology with Dr. David Wong MD and DirectDerm*
- *Tele-ophthalmology with retinal imaging*
- *Tele-ultrasound (OB/abdominal) readings via cloud based technology of store and forward*
- *Tele-obstetrics with Dr. Cori-Ann Hirai, MD and Dr. Kimberly Nagamine, MD*
- *Tele-Coordinated Nephrology, Urology, and Gastroenterology*
- *Tele-pediatrics with Dr. Jeesun Nam, MD University of California, Irvine.*
- *Remote monitoring through Bluetooth devices for blood pressure and blood sugar*
- *Coming tele-cardiology/echocardiology and tele-GI*
- *Tele-dietitian-WIC and adults*

LCHC services also include:
- *Family Planning*
- *WIC*
- *Perinatal Support Services*
- *Adult and pediatric primary care*
- *Nutrition Support with Registered Dietitian*
- *Behavioral Health Services,*
- *Dental care*
- *Optometry*
- *Free Fitness Programs*
- *Health Education at Lanai High and Elementary School*

HOW IS OUR PROGRAM UNIQUE?

*OB and other specialty care is modeled after our BH integration with the UH Department of Psychiatry

- The OB consultant/PCP is a partnership in providing quality prenatal care.
- LCHC/UHP standardizes prenatal care by working together as a unified health care team.
- The OB consultant is available by phone within 24 hours for OB specific needs.
- The OB consultant visits twice a year to LCHC to have face to face visits with patients and the PCP.
- OB consultant/PCP have VTC meetings every other month to review patient care and it is an opportunity for the OB consultant to share their knowledge on OB topics of interest/need with the PCP.
- Telehealth visits for prenatal patients occur with the OB consultant in the first trimester and will then alternate every other visit as the patient meets with the PCP for prenatal care.
- The PCP participates in the telehealth visits.

Out-of-Office and Self-Monitoring of BP

COR	LOE	Recommendation for Out-of-Office and Self-Monitoring of BP
I	A^{SR}	Out-of-office BP measurements are recommended to confirm the diagnosis of hypertension and for titration of BP-lowering medication, in conjunction with telehealth counseling or clinical interventions.

SR indicates systematic review.

C Risk of Death from Cardiac Causes across Systolic Blood-Pressure Values
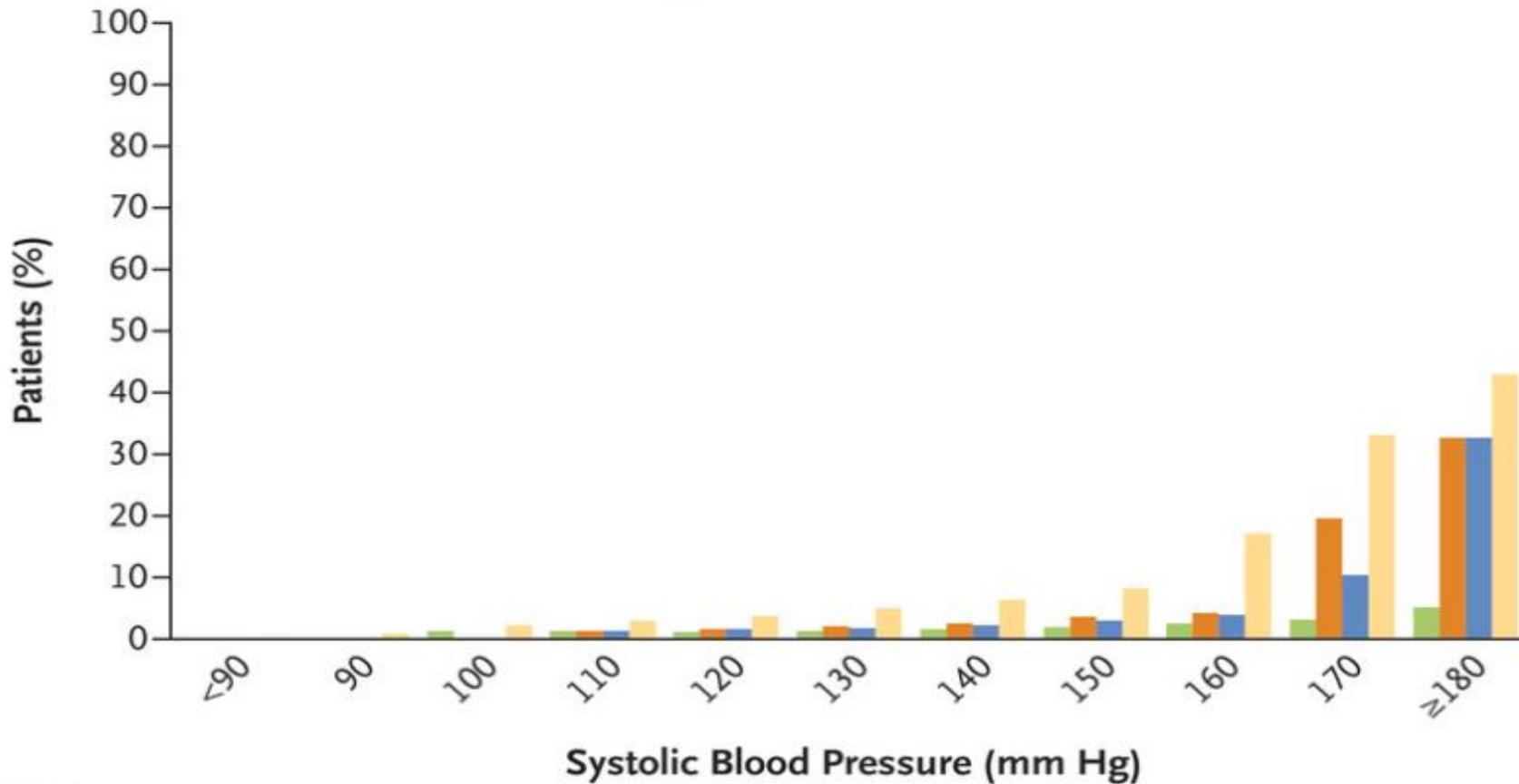
Legend: Clinic blood pressure, 24-Hr blood pressure, Daytime blood pressure, Nighttime blood pressure

Y-axis: Patients (%)
X-axis: Systolic Blood Pressure (mm Hg)

No. at Risk

	<90	90	100	110	120	130	140	150	160	170	≥180
Clinic		42	165	721	2,181	6,006	11,029	15,707	12,682	7,646	4,049	3,682
24-Hr		46	444	3,498	12,087	19,443	16,040	7,780	3,046	1,024	337	165
Daytime		35	301	2,349	8,912	17,332	18,075	10,437	4,233	1,510	500	226
Nighttime		648	3,983	12,419	17,691	14,205	8,149	3,927	1,747	690	268	183

Risk of death from cardiac causes across systolic blood pressure

Systolic blood pressure (mm Hg)

No. at Risk	<90	90	100	110	120	130	140	150	160	170	>180
Clinic	42	165	721	2181	6006	11029	15707	12682	7646	4049	3682
24-Hr	46	444	3498	12087	19443	16040	7780	3046	1024	337	165
Daytime	35	301	2349	8912	17332	18075	10437	4233	1510	500	226
Night-time	648	3983	12419	17691	14205	8149	3927	1747	690	268	183

Figure 1. The circadian rhythm of blood pressure[1]

24-hour BP profile in untreated hypertensive patients (n=20)[17]

Systolic BP

Diastolic BP

Morning hours

Blood pressure (mmHg)

Time of day
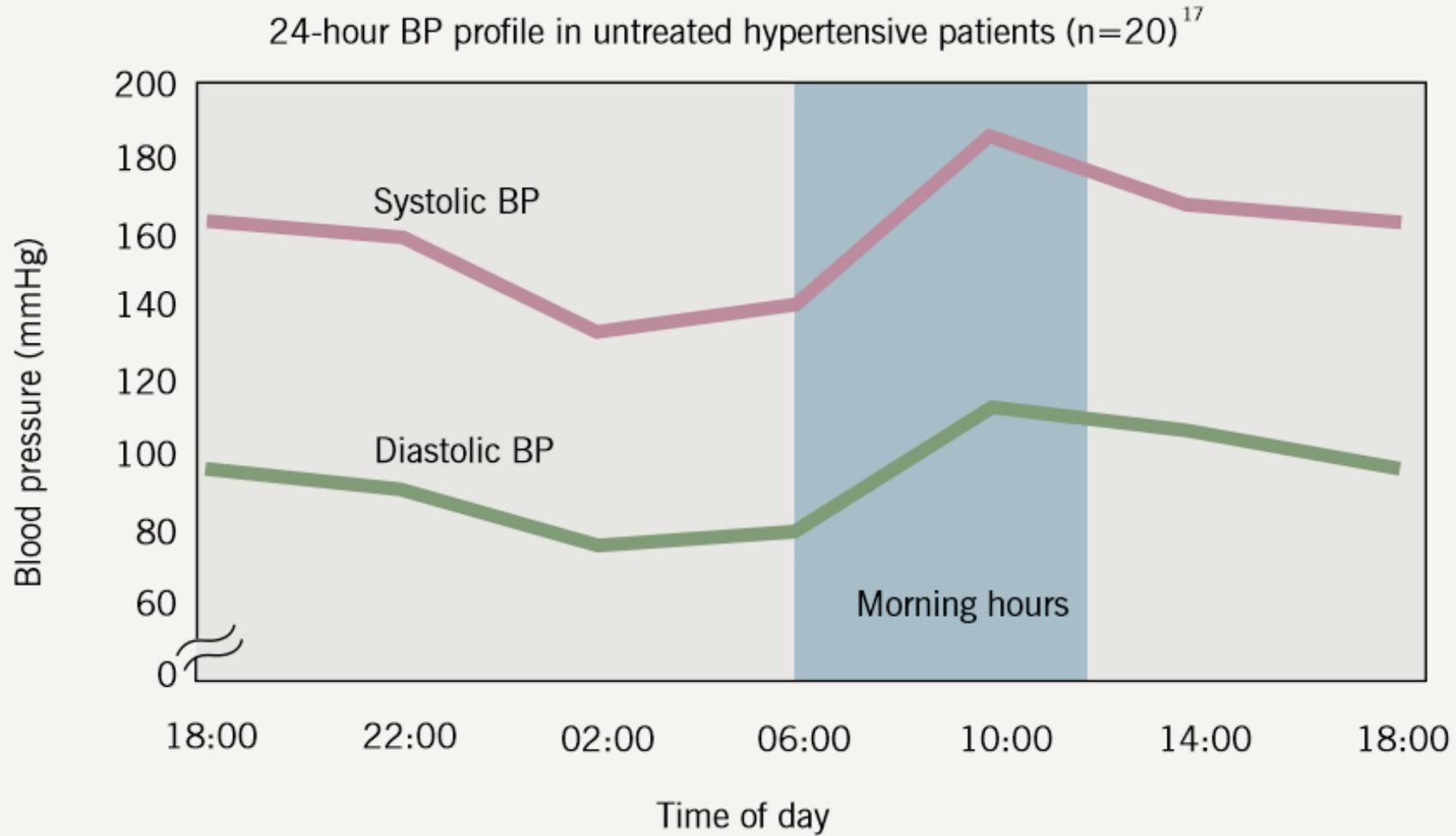
Key: BP= blood pressure

Blood Pressure Log

Date	12am - 4am	4am - 8am	8am - 12pm	12pm - 4pm	4pm - 8pm	8pm - 12am	Total Daily Readings	Daily Average
06/25/2019		132/83, 143/87, 139/72					3	138/80.67
06/24/2019		139/87, 154/86, 138/85					3	143.67/86
06/23/2019		167/92, 156/88, 161/87				108/76, 117/78, 115/82	6	137.33/83.83
06/22/2019		144/82, 172/96, 150/90			96/62, 108/63, 106/56		6	129.33/74.83
06/21/2019		145/75, 148/78, 144/92			119/64, 114/70, 123/75		6	132.17/75.67
06/20/2019		161/93, 146/91, 150/97			107/60, 101/57, 107/58		6	128.67/76
06/19/2019		144/83, 123/82, 149/84			114/65, 109/64, 109/62		6	124.67/73.33
06/18/2019		126/81, 126/91, 138/86			122/66, 122/67, 118/66		6	125.33/76.17
06/17/2019		129/85, 143/80, 123/76			99/60, 88/59, 101/58		6	113.83/69.67
06/16/2019		149/84, 149/87, 149/85				123/83, 125/85, 125/93	6	136.67/86.17
06/15/2019		125/84, 164/89, 160/82			103/62, 111/66, 122/65		6	130.83/74.67
06/14/2019		158/81, 145/76, 140/74			101/61, 101/65, 109/67		6	125.67/70.67
06/13/2019		148/86, 146/84, 137/81			101/59, 109/63, 118/72		6	126.5/74.17
06/12/2019		167/86, 160/85, 155/93			137/89, 137/87, 141/91		6	149.5/88.5
06/11/2019		153/81, 150/86, 170/92			128/81, 137/80, 158/87		6	149.33/84.5
Average		147/85			114.42/67.48	118.83/82.83		

🟦 - Below the Target Range (120/40)   ⬛ - Within the Target Range   🟥 - Above the Target Range (180/90)

Team-based care

- Patient engagement: Self-management, data gathering and transmission, share decision making

- Roles of MAs and CHWs: Training and partnering with patients, BP data uploads and tracking, lifestyle coaches and communication to providers

- Pharmacy integration: Available clinical data including home BP and BG readings to assist in mediation management; partners in treatment protocol and providing medication management via telehealth

- Providers: Standardized treatment protocol for uniform patient management, share decision making, interpretation of home readings and supervision of MAs and CHWs