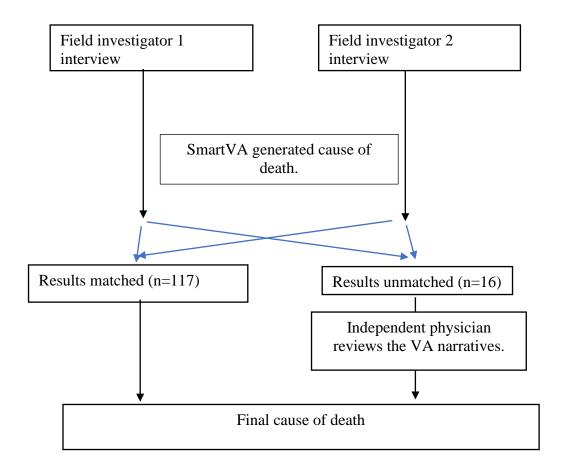
Supplementary Figure 1: Data collection flow



Supplementary table S1: Age and sex disaggregated mortality data of Andhra Pradesh and STOP CKDu study.

	Gender (deceased population) n=133		Age specific death rate per 1000
Variables	Male (n=100), n (%)	Female (n=33), n (%)	— population
Age			
18-30	2 (2)	Nil	6.15
31-40	3 (3)	3 (9.1)	10.56
41-50	19 (19)	8 (24.2)	40.84
51-60	25 (25)	11 (33.3)	70.45
>60	51 (51)	11 (33.3)	175.1

POPULATION HEALTH METRICS RESEARCH CONSORTIUM SHORTENED VERBAL AUTOPSY QUESTIONNAIRE GENERAL INFORMATION MODULE

INTERVIEW BEGINS

Instructions to interviewer: Introduce yourself and explain the purpose of your visit. Ask to speak to the mother or to another adult who was the deceased's main caretaker during the illness that led to death. If this is not possible, arrange a time to revisit the household when the caretaker will be home. (see example below).

"My name is [your name]. I am an interviewer with the Population Health Metrics Research Consortium project. I have been informed that a death has occurred in your household. I am very sorry to hear that a member of your household has passed away. Please accept my sympathies. For the purpose of improving health care, we are collecting information on all recent deaths in this area. I would like to talk to the mother or main caretaker of [the deceased's name] and ask some questions about the events and any symptoms that [the deceased's name] had during her/his illness before death."

SECTION 1 QUESTIONS ON THE DECEASED

1.1	Address of/directions to household	

SECTION 2: CONSENT

	INTERVIEWER: Read the consent form to the respondent. Ask the respondent if he or she has any questions. Once any questions are answered, ask the respondent if he or she is willing to take part in the study.		
2.1	Did respondent give consent?	1. Yes 2. No	
	If answer is "Yes" proceed to 3.1. If answer is "No" then thank responden	nt for their time and end the interview.	

SECTION 3 QUESTIONS ON THE DECEASED

3.1	What was the name of the deceased?	[]
3.2	What year was the deceased born?	[]]] Enter 9999 if unknown Year must be between 1880 and this year.
3.3	What month was the deceased born?	[]] Enter 99 if unknown Month must be between 1 and 12.

3.4	What day of the month was the deceased born?	[]] Enter 99 if unknown Day must be between 1 and 31.	
3.5	What was the sex of the deceased?	1. Male 2. Female	
3.6	What year did the deceased die?	[]]] Enter 9999 if unknown Year must be between 1880 and this year.	
3.7	What month did the deceased die?	[]] Enter 99 if unknown Month must be between 1 and 12.	
3.8	What day of the month did the deceased die?	[]] Enter 99 if unknown Day must be between 1 and 31.	
3.9	What was the last known age of the deceased? (Less than 24 hours = 00 days. Enter age in days up to 27 days. Enter 28 days as 1 month. From 1-11 months enter age in months. Enter 12 months as 1 year. From 1 year enter age in years.)	 days Enter 99 if unknown months Enter 99 if unknown years Enter 99 if unknown Refused to answer Don't know 	
	If "Refused to answer" or "Don't know", go to 3.1	0	
3.10	What age group does the deceased's last known age fall into?	1. Less than 28 days 2. 28 days – 11 years 3. Older than 12 years 8. Refused to answer 9. Don't Know	
	If age and age group are both "Don't know" or "Refused to answer", thank respondent for their time and e interview.		and end the
3.11	Where did the deceased die?	 Hospital Other health facility On route to hospital or other health facility Home Other (specify) Refused to answer Don't know 	

SECTION 4 QUESTIONS ON THE NOTIFICATION OF DEATH

4.1	Has this death been registered? (refer to local registration process, e.g. with the civil registry office)	1. Yes 2. No 8. Refused to answer 9. Don't know	
	If "No", "Refused to answer" or "Don't know", go	to 4.4	
4.2	Record the date of registration Enter 9999 if unknown	// dd mm yyyy	
4.3	Record the registration number:		
4.4	Has this death been notified? (question for the interviewer)	1. Yes 2. No 9. Don't know	
	If "No", "Refused to answer" or "Don't know", go	to 4.6	
4.5	Record notification number:		
4.6	Did the decedent have a National ID number?	 Yes No Too young for a National ID number Not relevant Refused to answer Don't know 	
	If "Yes", go to 4.7 If "Too young for a National ID number", go to 4 If "No", "Not Relevant", "Refused to answer" or "	.8 'Don't know", go to specific age group VA module	I
4.7	Record the National ID number:		
	Go to specific age group VA module	,	
4.8	Does one of the parents have a National ID number?	Yes No Refused to answer Don't know	
	If "No", "Refused to answer" or "Don't know", go	to specific age group VA module	

4.9	Which parent will we record?	 Mother Father 	
4.10	Record the parent's National ID number:		l

If deceased was 12 years or older, begin Adult VA module.
If deceased was 28 days or older and younger than 12 years, begin the Child VA module.
If deceased was less than 28 days old, go to the Neonate VA module.

POPULATION HEALTH METRICS RESEARCH CONSORTIUM SHORTENED VERBAL AUTOPSY QUESTIONNAIRE ADULT AND ADOLESCENT VERBAL AUTOPSY MODULE

SECTION 1: INJURIES AND ACCIDENT

1.1	Did suffer from an injury or accident that led to his/her death? If "No", refused to answer or don't know is checked, go to	Road traffic crash/injury	
1.2	What kind of injury or accident didsuffer from? Ask respondent each in sequence and mark all to which the respondent indicated "Yes."	 Fall Drowning Poisoning Bite or sting by venomous animal Burn/fire Violence (suicide, homicide, abuse) Other injury, specify Refused to answer Don't know 	
1.3	Was the injury or accident self-inflicted?	 Yes No Refused to answer Don't know 	
1.4	Was the injury or accident intentionally inflicted by someone else?	 Yes No Refused to answer Don't know 	
	Go to Section 6: HEALTH RECORDS		

SECTION 2: HISTORY OF CHRONIC CONDITIONS OF THE DECEASED

2.1	Was ever told by a health professional that he or she ever suffered from one of the following?		
2.2	Asthma	1. Yes 2. No 8. Refused to answer 9. Don't know	
2.3	Cancer	Yes No Refused to answer Don't know	

2.4	COPD (Chronic Obstructive Pulmonary Disease)	Yes No Refused to answer Don't know	
2.5	Diabetes	 Yes No Refused to answer Don't know 	
2.6	Epilepsy	Yes No Refused to answer Don't know	
2.7	Heart Disease	 Yes No Refused to answer Don't know 	
2.8	Tuberculosis	 Yes No Refused to answer Don't know 	
2.9	Stroke	 Yes No Refused to answer Don't know 	
2.10	AIDS	 Yes No Refused to answer Don't know 	

SECTION 3: SYMPTOM CHECKLIST

3.1	Did have a fever?	Yes No Refused to answer Don't know	
	If "No" or "Don't know" or "Refused to answer" go to 3.4		
3.2	How severe was the fever?	 Mild Moderate Severe Refused to answer Don't know 	

3.3	What was the pattern of the fever?	 Continuous On and off Only at night Refused to answer Don't know 	
3.4	Did have a rash?	 Yes No Refused to answer Don't know 	
	If "No" or "Don't know" or "Refused to answer" go to 3.6		
3.5	Where was the rash located?	 Face Trunk Extremities Everywhere Refused to answer Don't know 	
3.6	Did have sores?	Yes No Refused to answer Don't know	
	If "No" or "Don't know" or "Refused to answer" go to 3.8	1	
3.7	Did the sores have clear fluid or pus?	 Yes No Refused to answer Don't know 	
3.8	Did have an ulcer (pit) on the foot?	Yes No Refused to answer Don't know	
	If "No" or "Don't know" or "Refused to answer" go to 3.11		•
3.9	Did the ulcer ooze pus?	 Yes No Refused to answer Don't know 	
	If "No" or "Don't know" or "Refused to answer" go to 3.11	1	
3.10	For how many days did the ulcer ooze pus?	1 days Enter 99 if unknown 8. Refused to answer 9. Don't know	
3.11	Did have yellow discoloration of the eyes?	Yes No Refused to answer	

		9. Don't know	
	If "No" or "Don't know" or "Refused to answer" go to 3.13		I
3.12	For how long did have the yellow discoloration?	 days Enter 99 if unknown months Enter 99 if unknown Refused to answer Don't know 	
3.13	Did have puffiness of the face?	1. Yes 2. No 8. Refused to answer 9. Don't know	
	If "No" or "Don't know" or "Refused to answer" go to 3.15		
3.14	For how long did have puffiness of the face?	1 days Enter 99 if unknown 2 months Enter 99 if unknown	
		8. Refused to answer9. Don't know	
3.15	Did have general puffiness all over his/her body?	 Yes No Refused to answer Don't know 	
3.16	Did have a lump in the neck?	 Yes No Refused to answer Don't know 	
3.17	Did have a lump in the armpit?	 Yes No Refused to answer Don't know 	
3.18	Did have a lump in the groin?	 Yes No Refused to answer Don't know 	
3.19	Did have a cough?	Yes No Refused to answer Don't know	

	If "No" or "Don't know" or "Refused to answer" go to 3.22		
3.20	Did the cough produce sputum?	 Yes No Refused to answer Don't know 	
3.21	Did cough blood?	 Yes No Refused to answer Don't know 	
3.22	Did have difficulty breathing?	 Yes No Refused to answer Don't know 	
3.23	Did experience pain in the chest in the month preceding death?	 Yes No Refused to answer Don't know 	
	If "No" or "Don't know" or "Refused to answer" go to 3.25		
3.24	How long did the pain last?	1. Less than 30 minutes 2. 30 minutes to 24 hours 3. More than 24 hours 8. Refused to answer 9. Don't know	
3.25	Did have more frequent loose or liquid stools than usual?	Yes No Refused to answer Don't know	
			1
3.26	Was there blood in the stool?	 Yes No Refused to answer Don't know 	
	If "No" or "Don't know" or "Refused to answer" go to 3.28		
3.27	Was there blood in the stool up until death?	 Yes No Refused to answer Don't know 	
3.28	Did stop urinating?	Yes No Refused to answer Don't know	
3.29	Did vomit in the week preceding the death?	1. Yes 2. No	

		Refused to answer Don't know	
	If "No" or "Don't know" or "Refused to answer" go to 3.32		
3.30	Was there blood in the vomit?	 Yes No Refused to answer Don't know 	
3.31	Was the vomit black?	Yes No Refused to answer Don't know	
3.32	Did have difficulty swallowing?	Yes No Refused to answer Don't know	
	If "No" or "Don't know" or "Refused to answer" go to 3.35		
3.33	For how long before death did have difficulty swallowing?	1 days Enter 99 if unknown 2 months Enter 99 if unknown	
		Refused to answer Don't know	
3.34	Was the difficulty with swallowing with solids, liquids, or both?	 Solids Liquids Both Refused to answer Don't know 	
3.35	Did have pain upon swallowing?	Yes No Refused to answer Don't know	
3.36	Did have belly pain?	 Yes No Refused to answer Don't know 	
	If "No" or "Don't know" or "Refused to answer" go to 3.39		
3.37	For how long before death did have belly pain?	1 hours Enter 99 if unknown 2 days Enter 99 if unknown 3. months	

		Enter 99 if unknown	
		8. Refused to answer 9. Don't know	
3.38	Was the pain in the upper or lower belly?	Upper belly Lower belly Refused to answer Don't know	
3.39	Did have a more than usual protruding belly?	 Yes No Refused to answer Don't know 	
	If "No" or "Don't know" or "Refused to answer" go to 3.42	I	
3.40	For how long before death did have a protruding	1 days Enter 99 if unknown 2 months Enter 99 if unknown	
3.40	belly?	8. Refused to answer 9. Don't know	
3.41	How rapidly did develop the protruding belly?	Rapidly Slowly Refused to answer Don't know	
3.42	Did have any mass in the belly?	 Yes No Refused to answer Don't know 	
	If "No" or "Refused to answer" or "Don't know", go to ques	tion 3.44	
3.43	For how long before death did have a mass in the belly?	1 days Enter 99 if unknown 2 months Enter 99 if unknown	
		8. Refused to answer9. Don't know1. Yes	
3.44	Did have a stiff neck?	2. No8. Refused to answer9. Don't know	
	If "No" or "Refused to answer" or "Don't know" go to quest	ion 3.46	
3.45	For how long before death did have stiff neck	1 days	

		Enter 99 if unknown	
		2 months Enter 99 if unknown	
		Refused to answer Don't know	
3.46	Did experience a period of loss of consciousness?	 Yes No Refused to answer Don't know 	
	If "No" or "Refused to answer" or "Don't know" go to quest	ion 3.49	
3.47	Did the period of loss of consciousness start suddenly or slowly?	1. Suddenly 2. Slowly 8. Refused to answer 9. Don't know	
3.48	Did it continue until death?	 Yes No Refused to answer Don't know 	
3.49	Did have convulsions? (Demonstrate)	 Yes No Refused to answer Don't know 	
	If "No" or "Refused to answer" or "Don't know" go to quest	ion 3.52	.1
3.50	For how long before death did the convulsions last?	1 minutes Enter 99 if unknown 2 hours Enter 99 if unknown 8. Refused to answer 9. Don't know	
3.51	Did the person become unconscious immediately after the convulsions?	Yes No Refused to answer Don't know	
3.52	Was in any way paralyzed?	Yes No Refused to answer Don't know	
	If "No" or "Refused to answer" or "Don't know", if the deceased was female, then go to section 4: Que if the deceased was male, then go to section 5: Tobac		1

		Right side (arm and leg) Left side (arm and leg)	
		3. Lower part of the body	
		4. Upper part of the body	
	Which were the limbs or body parts paralyzed?	5. One leg only	
3.53		6. One arm only	
3.53	Read through the list in sequence and MARK ALL THAT	7. Whole body	
	APPLY	11. Other (specify)	
		8. Refused to answer	
		9. Don't know	

If the deceased was female, then continue to Section 4: Questions for Women.

If the deceased was male, then go to Section 5: Tobacco Use

SECTION 4: QUESTIONS FOR WOMEN

4.1	Did have any swelling or lump in the breast?	 Yes No Refused to answer Don't know 	
4.2	Did have any ulcers (pits) in the breast? Show photo	Yes No Refused to answer Don't know	
	Refer to General Module Question 3.9: last known ag If the decedent is under 18 years old go to question 4 If the decedent is 18-39 years old go to question 4.6 If the decedent is over 40 years old go to question 4.	1.3	
4.3	Did ever have a period or menstruate?	Yes No Refused to answer Don't know	
	If "Yes", "Don't know" or "Refused to answer" skip to If "No" skip to Section 5: Tobacco Use	4.6	
4.4	Had's periods stopped naturally because of menopause?	Yes No Refused to answer Don't know	
	If "No" skip to 4.6	1	
4.5	Did have vaginal bleeding after cessation of menstruation? (post-menopausal)	 Yes No Refused to answer Don't know 	

	Skip to Section 5: Tobacco Use		
4.6	Did have vaginal bleeding other than her period? (intermenstrual)	Yes No Refused to answer Don't know	
4.7	Was there excessive vaginal bleeding in the week prior to death?	Yes No Refused to answer Don't know	
4.8	At the time of death was her period overdue?	Yes No Refused to answer Don't know	
	If "No" or "Refused to answer" or "Don't know" go to qu	uestion 4.10	
4.9	For how many weeks was her period overdue?	1 weeks Enter 99 if unknown 8. Refused to answer 9. Don't know	
4.10	Did she have a sharp pain in the belly shortly before death?	Yes No Refused to answer Don't know	
4.11	Was she pregnant at the time of death?	Yes No Refused to answer Don't know	
	If "No" or "Refused to answer" or "Don't know", question	on 4.18	
4.12	For how many months was she pregnant?	1 months Enter 99 if unknown 8. Refused to answer 9. Don't know	
4.13	Did die during an abortion?	 Yes No Refused to answer Don't know 	

4.14	Did bleeding occur while she was pregnant?	Refused to answer Don't know	
4.15	Did she have excessive bleeding during labour or delivery?	Yes No Refused to answer Don't know	
4.16	Did she die during labor or delivery? ("Labor" is the period of time by which contractions are less than 10 minutes apart.)	Yes No Refused to answer Don't know	
4.17	For how long was she in labor?	1 hours Enter 99 if unknown 8. Refused to answer 9. Don't know	
	If answer to 4.16 is "Yes", skip to Section 5: Tobacco	Use	
4.18	Did she die within 6 weeks of having an abortion?	 Yes No Refused to answer Don't know 	
	If "Yes", skip to 4.20		
4.19	Did she die within 6 weeks of childbirth?	Yes No Refused to answer Don't know	
	If "No" or "Refused to answer" or "Don't know", skip to Section 5: Tobacco Use		
4.20	Did she have excessive bleeding after delivery or abortion?	1. Yes 2. No 8. Refused to answer 9. Don't know	
SECTION 5: 1	TOBACCO USE		
5.1	Did use tobacco?	1. Yes2. No8. Refused to answer9. Don't know	
	If "No" or "Refused to answer" or "Don't know" go to S	Section 6: Health Records	
5.2	What kind of tobacco did use?	Cigarettes Pipe Chewing Tobacco	

1. Yes 2. No

If "Yes", skip to 4.20

		4. Local form of Tobacco 5. Other (specify) 8.Refused to answer	
	If "Yes" to cigarettes, continue to 5.3. If "No" to cigaret	9. Don't know Ites. go to Section 6: Health Records	
		-	1
	How many cigarettes did smoke daily?	1. Number	
5.3		8. Refused to answer9. Don't know	
SECTION 6: H	IEALTH RECORDS		
6.1	Was care sought outside the home while the deceased had this illness?	1. Yes 2. No 8. Refused to answer 9. Don't know	
	If "No" or "Don't know" or "Refused to answer" go to 6.	4	
6.2	Where or from whom did you seek care? (CHECK ALL THAT APPLY)	 Traditional Healer Homeopath Religious leader Government Hospital Governmental health center or clinic Private Hospital Community-based practitioner associated with health system Trained birth attendant Private physician Pharmacy, drug seller, store, market Other provider Relative, friend (outside household) Refused to answer Don't know 	
6.3	Record the name and address of the hospital, health center or clinic where the care was sought. :		
6.4	Did a health care worker tell you the cause of death?	 Yes No Refused to answer Don't know 	
	If "No" or "Don't know" or "Refused to answer" go to 6.	6	
6.5	What did the health care worker say?		
6.6	Do you have any health records that belonged to the deceased?	 Yes No Refused to answer Don't know 	

	If "No" or "Don't know" or "Refused to answer" go to 6.11		
6.7	Can I see the health records?	1. Yes 2. No 8. Refused to answer 9. Don't know	
	If "No" or "Don't know" or "Refused to answer" go to 6.11. see the records, transcribe entries below	If "Yes", and respondent allows you to	
6.8	Record the dates of the two most recent visits from the health record If not listed, mark 9999	1// dd mm yyyy 2// dd mm yyyy	
6.9	Record the date of the last note Enter 9999 if unknown	// dd mm yyyy	
6.10	Transcribe the note:		
6.11	Was a death certificate issued?	Yes No Refused to answer Don't know	
	If "No" or "Don't know" or "Refused to answer" go to Section	on 7: Open Ended Response	
6.12	Can I see the death certificate?	Yes No Refused to answer	
	If "No" go to Section 7: Open Ended Response		
6.13	Record the immediate cause of death from the certificate.		
6.14	Record the first underlying cause of death from the certificate.		

6.15	Record the second underlying cause of death from the certificate.		
6.16	Record the third underlying cause of death from the certificate.		
6.17	Record the contributing cause(s) of death from the certificate.		
	END OF HEALTH RECORDS SECTION GO TO SECTION 7: OPEN ENDED RESPONSE AND INTERVIEWER COMMENTS/OBSERVATIONS		

Section 7: Open Ended Response and Interviewer Comments/Observations Section

Instructions to the interviewer: Say to the respondent: "Thank you for the patient responses to this exhaustive set of questions. Could you please summarize, or tell us in your own words, any additional information about the illness and/or death of your loved one?"

To the interviewer: Listen to what the respondent tells you in his/her own words. Do not prompt except for asking whether there was anything else after the respondent finishes. If the respondent mentions any of the following words, mark "mentioned". Tell the respondent to stop and start again if they mention a word of interest, so you have time to mark it down.

Adult Checklist

	Key words	Mentioned
7.1	Chronic Kidney Disease	
	Dialysis	
	Fever	
	Heart Attack (AMI)	
	Heart Problems	
	Jaundice	
	Liver Failure	
	Malaria	
	Pneumonia	
	Renal (Kidney) Failure	
	Suicide	

7.2	Confirm that no words of interest were used during the open response.	No word was mentioned Don't know	
-----	-----------------------------------------------------------------------	--------------------------------------	--

END OF INTERVIEW.
THANK RESPONDENT FOR PARTICIPATION

MODIFIED KUPPU SWAMI SCALE

1		Professional Degree	7	
	Education	Graduate or Post graduate	6	
		Intermediate or diploma	5	
		High school (9 to 10)	4	
		Middle school (6 to 8)	3	
		Primary school or literate (1 to 5)	2	
		illiterate	1	
2	Occupation	Professional	10	
	Semi professional	6		
		Clerical, shop owner/farm	5	
		Skilled worker	4	
		Semi-skilled worker	3	
		Unskilled worker	2	
		Unemployed	1	
3	Income	≥52,734	12	
		26,355-52,734	10]
		19,759-26,355	6	Income in INR/
		13,161-19,759	4	month
		7887-13,161	3	1
		2,641-7,886	2	
		≤2,641	1	