This brief forms part of a series produced on NCDs. While I collaborated on all the briefs, I lead research and writing for this brief in particular, with colleagues from Percept only offering editorial comments and review.

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Households and NCDs

Brief 8

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Research briefs on non-communicable diseases in South Africa

We have developed a series of briefs aiming to explain, explore and quantify the burden of non-communicable diseases (NCDs) in South Africa. Throughout the briefs, we draw together both existing quantitative data as well as emerging qualitative data. The primary qualitative data presented in the form of vignettes, has been collected by Dr Beth Vale, through in-depth ethnographic research. These briefs are timely, given the rising global burden, and particularly the rising burden in low- and middle-income countries (LMICs), of NCDs. Given South Africa's high prevalence of HIV, there has also been a recent focus on the link between HIV and NCDs as the population living with HIV grow increasingly older with the successful uptake of antiretrovirals. An ageing population is more at risk for NCDs as we will explain in our briefs. As we move towards universal health coverage (UHC) it is imperative that we understand the needs of our population now and how these may change going forward. We have produced twelve briefs in this series.

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- Actuarial Society of South Africa (ASSA): ASSA has an interest in being part of the development of high-quality evidence to support resource allocation and decision-making and the interplay between the supply and demand sides of the health system.
- RGA Reinsurance Company of South Africa Ltd (RGA): RGA has an interest in the ways in which life insurance can be responsive to the changing burden of disease and the ways in which we can use data to drive decision-making.
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Introduction

Despite being defined by their *non*-infectiousness, non-communicable diseases (NCDs)[i] – like infectious ones – often cluster in households. This is because people who live together not only have close physical proximity, but also intimate social and interpersonal ties. In the 2018 General Household Survey, thirty-five percent of South African households reported that they had more than one member living with an NCD.[ii] Because people often under-estimate or under-report NCDs, this is likely to be a low estimate of the level of NCD burden in South African households.

The reality that NCDs often collect in homes suggests that there is a broader sense in which these conditions are, in fact, transmissible: vulnerability to NCDs moves within households, neighbourhoods, and populations. As such, conditions of ill-health have their own contagion, even when the illnesses themselves do not.

[i] The definition of any NCD included diabetes, hypertension, cancer, asthma and mental illness as respondents self-identified from a list of possible diseases.
[ii] More detail on the composition of these households, in terms of household size, is provided later in the brief.

When a person develops an NCD, it is very likely that others in their household are also vulnerable: whether due to heredity; consumption practices; or shared exposure to social, psychological and environmental risks. Broadening our attention from the person diagnosed to their wider household might improve approaches to screening and create targeted linkages to care. By recognising that NCDs develop in community, and throughout a life course, we might reach younger household members long before they reach peak NCD vulnerability.

Beyond prevention, a household-oriented approach to NCDs also has implications for treatment: When a person begins an NCD-management programme, their success or failure in adhering to medication, managing their symptoms, and sticking to dietary prescriptions, often rests on the extent of support in their home. In so far as possible then, public health and disease management programmes should consider how household conditions might constrain or advance health for those with NCDs, and how to integrate treatment and prevention into patients' home lives.

In this brief, we draw on both primary and secondary data, to illustrate how NCDs travel within South African households, and the implications for prevention and care.

How NCDs move through households

NCDs arise from three, often interlinking, sets of risk factors, all of which have implications for households:

(1) *Hereditary risks*, which are embedded in families and move across generations;

(2) *Environmental risks*, including unhealthy food environments, poor air and water quality, and psychosocial stressors – all of which can be shared among people who work, commune or live together; and

(3) '*Behavioural' risks*, which include people's eating and exercise habits, as well as recreational practices like smoking and drinking. Since households often cook, eat, and play together, these risks, too, can be shared within homes.

These three sets of risk factors are by no means mutually exclusive. Instead, they interact with, and often compound one another, creating complex webs of illness vulnerability. Paul's story (Vignettes 1 & 2) is an apt example of how the conditions that predispose us to NCDs can cluster in homes. In his cases, some of these conditions might have been hereditary; others were likely environmental (including a shift to urban diets), and others still might have been shaped by the eating habits of the home.

Vignette 1: Diabetes in one Karoo Family
*extracted from Dr Beth Vale's fieldnotes

Towards the end of 2019, I met Pastor Paul Andrews — a small-town preacher, whose wider family had steadily left the farms during the 70s and 80s. By then, economic decline in the Eastern Cape Karoo had reached a crisis point, fueled by overgrazing, deepening drought, and shifts in market prices.[1] Many farms were shedding labour.

Paul grew up on a sheep farm, along with his mother, father and nine brothers. His father, who served as a farm labourer, was the household patriarch:

'He was the one who said what we must eat, and what we mustn't eat,' Paul remembered.

'So even though your mom was the cook,' I ventured, 'your father was the one who decided the meals?'

'Yes. He was.'

'So what did he like to eat?' I asked.

'He was all about meat.'

In those days, the family received a ration of sheep meat every month. But, by the time my fieldwork began, this practice had almost vanished.

In the mid-eighties, Paul's father decided to start a funeral business and moved the whole family to town. In the process, their diets changed dramatically. 'On farms, we used to eat healthy,' Paul told me. 'You know, like mielies and so on. Now we've moved to town and people want to eat the way the people in town eat – all these fatty foods and stuff. People don't worry about what they eat. They just eat. Go to *Spar*, buy a quick meal.'

Town also brought new social pressures. With few social connections, Paul's father had to make his newly-established family business succeed. Their livelihoods depended on it. Meanwhile, his now-adult children would also have to adjust and find work.

Fifteen years after leaving the farm, Paul's mother was diagnosed with diabetes. Until her diagnosis, family meals had always circulated around her husband's dietary preferences, but now she had reason to make her own stipulations. Paul remembers her telling the family exactly which times she had to eat. 'The doctor gave her an eating plan and she went strictly according to that thing', he told me. 'We had a big problem with that at first, because you know, when you aren't diabetic, you want to eat salt and seasonings in your food.'

Eventually, the family adapted to the diet, or so Paul says. But it would not be for long: he and his brothers would soon move into their own homes. 'For me it was better to be on my own. Because the thing is this: in my father's house, I can't dictate what we must eat and what we must not eat. But in my house, I could say, *no I don't want that*.'

Paul's story illustrates that food is a household practice, and diet – rather than being an individual 'choice' – is often a group negotiation. Household eating practices are impacted by the roles and hierarchies within them. At first, Paul's father dictated the family diet. But, after her diagnosis, his mother took charge – and had the power to do so because of her role as the family cook. It was only after moving out of his parent's home (which Paul significantly called 'his *father's* house') that Paul was able to dictate his own food choices.

Syndemics and the household

To draw greater public health attention to the household – as a site in which health is either made or broken – demands a different way of understanding and treating disease. Public health responses to NCDs would benefit from a conception of illness that is not simply biological, but rather *bio-social*. Since they so often arise from how we live, NCDs are a powerful exemplifier of illness' *social* vectors.

Medical anthropology offers us powerful tools to understand NCDs as bio-social conditions. The anthropological literature on *syndemics (see Box 1)*, in particular, illustrates the mutually re-enforcing relationships between social and biological ills. These authors argue that, rather than being bounded entities isolated within individual bodies, diseases are interwoven with the social conditions that allow them to develop and spread.

Box 1: At a population level, a *syndemic* is the co-occurrence of two or more epidemics (whether social or biological) that interact *synergistically* and are therefore mutually reinforcing. Using the syndemic approach, anthropologists have analysed a range of nested epidemics, which compound and hasten one another. These include: substance abuse, violence and AIDS in the U.S;[2] social distress, depression and diabetes in Mexico;[3] diabetes, violence and depression in South Africa; [4] as well as depression, neighbourhood deprivation and diabetes in Sweden.[5]

The literature on syndemics underlines the ways in which bio-social ills cluster – whether directly transmissible or not. Syndemics congregate within populations, neighbourhoods, and households, illuminating the psychological, social, and biological pathways between diseases, and that health is often an outcome of the environments in which people live.

Anthropologists Emily Mendenhall & Shane Norris[6] documented a syndemic of depression, hypertension, violence and diabetes in Sowetan households, in Johannesburg. Their primary respondents – older women – understood depression and hypertension as the outcome of a range of 'stresses.' The most common of these were located in the home: interpersonal abuse, concerns about children and grandchildren, family deaths, and financial pressures.

Meanwhile, the colliding epidemics of HIV/TB and NCDs compound and complicate one another both within individual bodies and wider households. Women in the study described how rebuilding their families after losing children to AIDS had not only been socially challenging, but had also impacted how they ate, as well as how they accepted and managed their diabetes.

To illustrate their findings, Mendenhall and Norris tell the story of one of a 59-year-old diabetic named Flory. Flory had been an activist in the apartheid resistance movement and later a community police officer. When her eyesight deteriorated, she quit the force. Within months of resigning from her job, her father died, and soon after, her brother too – as a consequence of AIDS and diabetes. Flory fell into a deep depression and her sugar-levels skyrocketed. Her story exemplified how social circumstances take their toll on the body, and in this respect, family and household relationships are particularly powerful.

In Mendenhall and Norris' study, households found themselves in vicious bio-social cycles of dis-ease. Social burdens were translated into physical illness, which in turn deepened social distress.

These findings are supported Beth Vale's primary ethnographic data: in **Vignette 2** (below) , we see a continuation of Paul's story, in which the illness and distress of one household member also seemed to have a knock-on effect for others. Despite having early warning of his own vulnerability to diabetes, following his mother's diagnosis, Paul did not escape diabetic complications and eventually lost his leg. His father, too, died from stroke, having suffered co-morbid hypertension and diabetes. The clustering of NCDs in households not only presents a potential hereditary risk, it also amounts to grave social, psychological, and often economic, distress. These, in turn, have implications for health.

Vignette 2: Paul's diagnosis

Paul described his mother as having been 'very strict on health.' She 'controlled' her diabetes for many years.

'But to my surprise, my father also picked it up. I don't know if she gave it to him. He used to say she gave it to him.'

This was the language of communicability, despite diabetes not being biologically transmissible at all. Perhaps it was an attempt, by Paul's father, to shift blame. But I also wanted to learn more about how Paul's family understood diabetes to have originated and spread among them.

'When your mom was diagnosed,' I asked Paul, 'did your family have a conversation about the fact that they might also be at risk?'

'No', he answered, 'We never spoke about it. When it happened, we just thought, let's do something to help her. But from our side, as a family, we never had a discussion, or asked, *Guys, what must we do now?*'

This was a missed opportunity for public health prevention. At the very least, Paul's family could have been counselled on hereditary predisposition to diabetes. Perhaps other members of the household could have been screened.

When the diagnosis resided only with Paul's mother, it seemed contained within the walls of her body. But his father's diagnosis changed things. The emergence of an illness like diabetes, in one relative and then another, can start to feel like its own contagion. At least that's how it felt for those in Paul's family.

Still, five years later, when Paul himself was diagnosed with diabetes, it came as a shock. 'It was so far out of my mind. I didn't even think about it. The thought of me having it was like a blowout!'

When news of Paul's diabetes reached his mother, she was devastated. Within a few years of her son's diagnosis, she herself would die from diabetic complications.

From the moment he was diagnosed, Paul was immediately started on insulin – two injections to the belly each day. When he forgot or refused his insulin, his wife would nudge him. 'We had this quarrel', Paul told me, 'because she just kept pestering, bringing me medicine'.

Paul's wife's 'pestering' was evidence of the ways that household relationships can support NCD treatment. She had also begun adjusting her cooking, following the prescriptions of Paul's dieticians. **As in childhood**, **Paul's diet was being was being shaped by the dynamics of his household**. This time, rather than his mother or father calling the dietary shots, it was his wife.

'The plan they give you is not that simple', Paul explained. 'You now have to eat things that you don't want to eat.' Paul's children weren't too fond of the new meal plan either. Their mother would plead with them not to complain or ask for more spices. 'Please try eat what is on the menu', she would say, 'because it's healthier'.

By the time I met Paul, it had been twelve years since his diagnosis. Not long after the death of his mother, his father died too – some sort of stroke, he told me. His father had suffered co-morbid diabetes and hypertension.

Paul himself was now in a wheelchair, having had one of his legs amputated two years prior. Each time we met, he wheeled himself onto the porch to greet me and I followed him into the sitting area.

Diabetes had seeped through Paul's family, between and across generations, taking lives and limbs along the way.

By treating the household, rather than the individual, the protective potential of Paul's family might still be harnessed: the caregiving and treatment support provided by his wife, the education given to his children, and the shared routines of maintaining healthy eating, exercise and screening habits.

As Mendenhall and Norris' research demonstrates, syndemics, which can unfold at a population or neighbourhood level, also have powerful effects within households. Because of the social, psychological and material ties between household members, one individual's health is often related to the health of those they live with – and their capacity to care, and be cared for, by them.

In Botswana, anthropologist Betsey Brada[7] has documented the relationship between adult hypertension and paediatric HIV within the same households, showing the dual pressures on adult women to manage both their own, as well as children's, health. She discovered that there was a mutually-re-enforcing relationship between uncontrolled adult hypertension and childhood HIV, both of which amplified one another. Children's illness could put pressure on their hypertensive caregivers, while adult illness compromised caregivers' ability to support treatment adherence. Despite this, hypertensive caregivers and HIV-positive adolescents were treated as distinct entities in public health facilities, whose cases were only incidentally related to one another.

A more appropriate response to the management of NCDs would be to treat them as *relational*, even though they are not directly transmissible.

In the Eastern Cape, Beth Vale also observed dyads of hypertensive caregivers and HIV-positive children, where the health outcomes of both household members were shown to be mutually constitutive (see **Vignette 3**).

Vignette 3: adult hypertension, depression and adolescent HIV

**extracted from Dr Beth Vale's fieldnotes*

In 2014, I sat with an HIV-positive adolescent and his caregiver in the waiting room of an Eastern Cape clinic. The day I spent with Simphiwe (age 13) and his aunt tells a story of when epidemics entangle in the lives of families, and how the health outcomes of household members intertwine.

We'd come to the clinic for Simphiwe's regular appointment: to collect his treatment and review his progress. He'd contracted HIV at birth and had been on ARVs for years. Having lost his mother to AIDS, Simphiwe now lived with his aunt, who must have been in her fifties. We had spent about an hour in the queue before she rose from her seat and began pacing the waiting room. With sweat dripping down her cheeks, she muttered about her high blood pressure and said she felt as though she was going to faint. Seeing the commotion, one of the nurses approached us to ask what the problem was. 'I have an aching muscle in my neck', Simphiwe's aunt told the nurse. 'Has this happened before?', the nurse asked.

'Yes, I saw a doctor in Port Elizabeth, who gave me a *Voltaren* injection. I slept for hours and the pain went away, but this week, it's come back'. The nurse turned to her colleague, a young male nurse who was new to the job: 'you see?' she said, 'these are the effects of stress and depression on the body…'

The nurse turned back to Simphiwe's aunt and reminded her that she had been at the clinic before in a similar condition: shaking, vomiting and experiencing spasms. On that occasion, too, she had come for Simphiwe, but had ended up feeling sick herself.

The male nurse interjected: 'is your husband not treating you well?' Simphiwe's aunt remained quiet. A moment later, she began to speak about a dream she had had about her own child, who died at nineteen. 'Your child would not want to see you like this', the nurse counselled. 'What if something happens to you now? What will happen to Simphiwe?' **Simphiwe's sustained health was tied to his aunt's ability to look after her own, just as her health had occasionally been compromised by the pressures of caring for him.**

In the lives of Simphiwe and his aunt, HIV/AIDS, trauma, depression and hypertension have collided in ways that make each of these more difficult to manage.

Households and NCD prevention

Contributing factors to NCDs – including obesity,[iii] alcohol consumption, depression and smoking – have been found to cluster within social networks,[8–11] suggesting that healthcare systems should pay attention to the relatives, friends and colleagues that make up a patient's social web. Households are a particularly strong social network, interacting daily with close ties that span generations.

There are risks in forgetting that many health prescriptions succeed or fail in homes. Take dietary prescriptions for example: research documents a rising dual-burden of both underweight and obese members within the same South African households.[12] The National Income Dynamics Survey suggests that 45% of households in which there are stunted children also have at least one obese adult.[13] While both underweight and overweight household members might suffer malnutrition, the dietary prescriptions they receive often differ. Since diet is often shared within households, underweight relatives could find themselves the target of obesity campaigns. A household-oriented approach to NCD prevention would keep the household in mind, focusing on messages that are beneficial to the good health of all. This might include increasing vegetable and fruit intake, improving overall diet quality, and increasing physical activity.

Literature on households' dual burden of under and over-weight members, also suggests that predisposition to NCDs starts forming in the first few years of life. We know that caregiving and early nutrition have powerful roles to play in shaping future health outcomes for children, and vulnerability to NCDs is among these outcomes. Under-nutrition in early life can lead to adult obesity.[14] By focusing on

[iii] While BMI is a simple and easy-to-collect measure of body fat, there are many issues and debates around its use. As an indirect measure, BMI does not account for age, sex, bone structure, fat distribution or muscle mass, all of which affect body fat measurements.[20] For example, athletes might have relatively high BMIs owing to high muscle mass and hence be classified as overweight, when they actually have low body fat.[20] BMI can also over- and under-estimate actual body fat measures in terms of age and sex.

the household, public health could take a *life course*[15] approach to NCD prevention:

This would begin as early as infancy. A WHO systematic review finds that exclusive breastfeeding helps prevent NCDs. Programmes to support exclusive breastfeeding would include paid maternity leave, breastfeeding support in the workplace and allowing mothers more time at home. Exclusive breastfeeding also demands buy-in and support from the whole household.

As children grow up – and particularly during adolescence – supporting mental health is important (along with healthy eating and physical exercise). Increasingly, mental illness is recognised as part of the cauldron of NCDs, often cohabiting with, and amplifying, other chronic illnesses. Depression, for example, can correlate with eating poorly, moving less and drinking more alcohol, thereby making one more vulnerable to NCDs, and also less likely to adhere to treatment. In adulthood, financial and work pressures can put greater strain on mental health.

Households can be a site of care, safety and nourishment throughout a person's life, promoting NCD resilience. But, household dysfunction or distress can also be formative in deepening NCD vulnerability.

Households and NCD management

The vast majority of chronic illness management happens at home – where we eat, take medication, and arrange our daily schedules. For this reason, it is in the home where health is, or is not, achieved. In **Vignette 3** (below), we see the direct effect of the household – in this case caregiving pressures – on treatment adherence. Indeed, when Beth Vale asked health workers in the Karoo, 'What makes the difference for chronic patients who do well on treatment?' Most said: family. Conversely, when patients with NCDs were not complying with treatment and struggling to keep their condition under control, this was often attributed to familial troubles.

Vale's primary data, reflected in vignettes throughout this brief, is supported by wider research, which shows the importance of family in determining medication adherence. In South Africa, evidence suggests that family dynamics are a significant moderating factor in determining whether patients adhere to HIV treatment.[16] In well-functioning families, adherence support has been shown to have a positive effect on immunological restoration, while dysfunctional families had a negative effect on HIV management and immune recovery. Here, dysfunctional families were those with the highest levels of vulnerability and the lowest levels of attachment.[16] These homes struggled to adapt to change or receive outside support.

Undoubtedly, a supportive, functional family is essential for adherence to NCD-treatment too.

Vignette 3: Caregiving and household health

In April 2019, I spent a day observing in a primary healthcare clinic near Somerset East, in the Eastern Cape Karoo. A woman in her early forties arrived for her consultation. She had been diagnosed with high blood pressure years ago, while pregnant. Since giving birth, she had decided to stop taking her treatment. But her blood pressure remained high. The doctor was recommending that she re-start the pills. While the doctor pressed her about why she had stopped in the first place and reminded her that she needed to take her pills every day, the woman described her caregiving responsibilities at home. She had her own child, as well as grandchildren to care for, which she said was 'stressing her out.' Her son had epilepsy, and part of her job was to ensure he took his treatment diligently.

This woman's health was intertwined with the other members of her household. Not only had her caregiving

responsibilities exacerbated her stress, they had also made it more difficult for her to monitor her hypertension. If she were to have a stroke, the wellbeing of her epileptic son as well as her grandchildren would suffer. Meanwhile, if any of these children were to fall ill or her son was to have a fit, her own health might be affected, due to the added strain on her physical and emotional resources.

Older people are at greatest biological risk of NCDs. In South Africa, they also often carry particular social burdens and heavy responsibilities in the home (see Vignette 4). In rural Uganda, research[17] shows that homes in which the household head is over the age of sixty are especially vulnerable when faced with chronic illness. 'Old' household members, it was found, often supported young grandchildren, but received little care themselves, making them less resilient when chronic illness struck.

The same study also explored the types of households that were most resilient to chronic illness-related adversity. These households had adaptive and responsive resources for care. Individuals who were ill moved to households that could provide care. Meanwhile, those who were healthy, especially young women, moved to households that needed care.

Vignette 4: Family function, the elderly and managing chronic illness

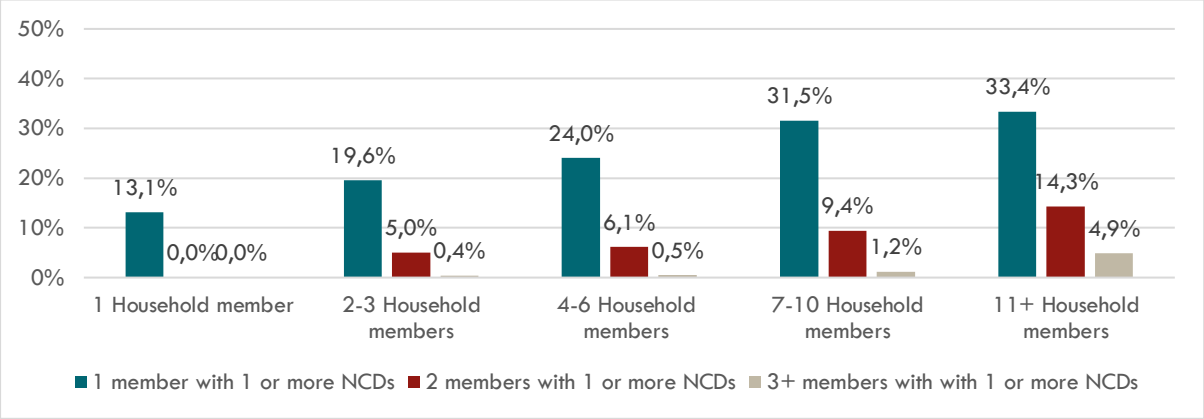
**excerpt from Dr Beth Vale's fieldnotes*

Nurses and home-based caregivers in the Eastern Cape Karoo regularly described the vulnerabilities of their elderly patients:

There were those with immense caregiving responsibilities, providing for adult children as well as grandchildren, using only their meagre pension. This caregiving burden occasionally hindered their own health-seeking and compromised their own health. In addition to elderly people who were over-burdened by dependent relatives, health workers also reported those whose primary source of vulnerability came from being alone, with all their young relatives having left to major cities. Elders living alone struggled to cook and clean for themselves, or walk to the clinic to collect their tablets. Whether because they had too many children around, or too few, the struggle for older people with chronic illness seemed to be the lack of care that they themselves could call upon.

South African survey data suggests that, as a household's size increases, so too does the proportion of members living with an NCD (See Figure 2). The proportion of household members living with one or more NCDs is 10% higher for households of 7-10 people than those of 2-3 people. At this point, one can only speculate about this data. But it may be that larger households have more dependents (usually children), putting adult household members under increased physical, emotional and financial strain. The financial challenges of feeding and looking after so many members can make it difficult to stay healthy, while also limiting the available resources for care.

Figure 2: Proportion of households[iv] with one or more members who have at least one NCD (Own analysis, GHS 2018)



Knock-on effects of NCDs in households

When one household member is diagnosed with an NCD, and particularly if they suffer acute complications, this has knock-on effects for other household members. This brief has already signaled that the health of one individual is often tied to those they live with. The ultimate health effects of living with a sickly household member, are interwoven with the other effects that sickness places on a household. These include financial, psychosocial stressors.

Research[18] has documented the significant economic burdens NCDs place on households, particularly poorer households. Many with NCDs report significant out-of-pocket health expenses, even when they are insured. Public access to cancer services is particularly poor, and ultimately immensely expensive for both private and public -sector patients. Even where medicine is free; transport to clinics and hospitals, and the loss of income-earning opportunities are significant costs. To add to this: it is not only the sick who might lose their income, but also their caregivers.

Vulnerable households in South Africa have been found to spend 30-50% of monthly income on chronic illness.[18] For these homes, NCD care was unaffordable without help from social networks.

Vignette 5: Caregiving for stroke sufferers

**excerpt from Dr Beth Vale's fieldnotes*

In July 2019, I observed a doctor's consultation in Pearston's primary healthcare clinic. The patient was a man in his sixties. He had suffered a stroke and wanted the doctor to refer him for a disability grant.

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Household size	Proportion of total households
1	8%
2-3	28%
4-6	44%
7-10	18%
11+	3%

The man, who could not speak for himself, was accompanied by his daughter. She explained that she was doing all the cooking and cleaning at home, and had to bathe, and dress her father. 'He can still eat and walk by himself,' the daughter explained, 'but he can't talk anymore. It's like looking after a baby. Sometimes, he just wanders off into the street. I have to keep an eye on him.' During one of his unannounced walks, her father had stood on something and the wound on his foot had become infected. 'He can't tell me what happened of course,' the daughter said.

This young woman, likely in her late thirties, was unable to earn an income herself. Instead, she was having to keep constant watch over her father and take care of his daily needs. The physical and emotional burdens of this were undoubtedly immense. The disability grant, it was hoped, might alleviate some of the financial burdens.

As we have already illustrated in this brief, caregivers are often particularly vulnerable to illness: more likely to be physically and emotionally stretched, but less likely to seek out healthcare. This means that when one person is sick because of an NCD complication, their caregiver is inadvertently at risk. In this case, the risk is not about physical proximity, but social strain (see **Vignette 5**).

What can be done to support NCD-affected households?

Public health practitioners and insurers would do well to remember that individual patients are nested in households, which have an indelible impact on their health outcomes. They should be thinking about how to mobilise the health-enhancing potential of households. Since the home is often where health is made, NCD prevention and management campaigns should think about how to support whole household health: promoting family eating plans and making sure they are accessible and affordable; providing clean water; fostering healthy living environments; and perhaps most importantly – supporting caregivers.

One example of government programming, aimed at creating health-enabling environments throughout the life course, is *Western Cape on Wellness* (WOW).[19] Its interventions include: health promotion, food gardens, free exercise classes, and safer play spaces.

As part of its strategy to reform the healthcare sector, the South African government has increasingly look towards community-oriented primary healthcare (COPC), driven by ward-based outreach teams, in which community health workers play a critical role. Rather than engaging patients at health facilities, COPC reaches people in their homes and communities, offering health education and screening, as well as psychosocial and treatment support. COPC can be a model of healthcare that is sensitive to context, understanding that individuals' health is nested in households and neighbourhoods. But for outreach teams to be effective, community health workers must be well-resourced, recognised, and supported.

There is scope for more analytical tools that map neighbourhood and environmental threats, as well as geo-spatial variation in the social determinants of health in relation to NCDs. An example of this is the mapping of neighbourhood food provision in relation to obesity.

In formulating NCD treatment plans, practitioners should be thinking about how to mobilise the social and emotional resources around patients. Understanding how NCDs impact households also reinforces calls for a multi-disciplinary response to healthcare. Social workers, ECD providers, lay care workers, and mental health practitioners are as essential to the NCD response as health professionals.

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