



## Microbes and marginalisation: 'Facing' antimicrobial resistance in bedridden patients in a peri-urban area of Thailand

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### ABSTRACT

Reducing human-microbial encounters through improved infection prevention and control (IPC) is widely acknowledged to be critical for reducing the emergence, transmission and burden of antimicrobial resistance (AMR). However, despite its centrality in the Global Action Plan (GAP) on AMR and adoption as a goal in National Action Plans around the world, there has been limited progress on reducing the incidence of antimicrobial resistant infections globally. In this paper, we argue that closer attention to different faces of AMR could propel progress in this area, with a focus on bedridden people situated in liminal spaces in the Thai health system and suburban economy. Our ethnographic fieldwork followed the cases of 16 bedridden people through the eyes of their carers and medical staff. We 'descended into the ordinary' to encounter individuals living - and dying - in the shadows of the labour-intensive suburbs of Bangkok. Here, AMR and IPC protocols are operationalised in the context of competing priorities and pragmatic decision-making. Focussing on three ethnographic vignettes, we use the analytic frames of precarity and care to consider how particular (bedridden) bodies are differentially exposed to AMR infections in the context of economic, social, and political arrangements that structure embodied vulnerabilities and forms and foci of care. Whilst the political work of calculating the burden of AMR may be oriented around galvanising support through a sense of magnitude and generalised risk, this research serves as a reminder that the faces of AMR include those who disproportionately shoulder the global burden of AMR, making it at once exceptional and ordinary.

### 1. Introduction

Antimicrobial resistance (AMR) is a serious global problem with significant health, social and economic consequences (O'Neill, 2016). In 2019, an estimated 4.95 million people died with drug resistant bacterial infections, with an estimated 1.27 million deaths attributable to bacterial AMR (Murray et al., 2022). Many of these deaths were preventable with improved infection control and timely healthcare interventions. And yet, access to the 'basics' of water, sanitation and hygiene remains a struggle for many (UNWater, 2021). Thailand is one of the few countries in South-East Asia (SEA) with an established AMR surveillance programme. Over the last 20 years, antimicrobial resistance of critical and priority pathogens has increased significantly in Thailand

(Sumpradit et al., 2017). Phodha et al. (2019) estimate an annual national burden of 48,258 deaths attributable to antimicrobial resistant nosocomial infections. In addition, Khamsarn et al. (2016) suggest that AMR bacteria 'commonly and freely circulate within the community'. However, despite evidence of the increasing burden of AMR in Thailand, considerable gaps remain in understanding the epidemiology and transmission dynamics between hospital and community settings in different populations.

The ways in which we portray the relational dynamics between humans, microbes, and medicines, are critical in shaping our actions in relation to AMR across scales (Landecker, 2016). Popular narratives of a generalised global threat, outlining a catastrophic future without (overused) antibiotics, proliferate in global public health discourse.

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Thailand's National Strategic Plan on AMR (Ministry of Public Health Thailand, 2016), situates AMR in the context of 'ageing preparedness' and increasing demand for antimicrobials (2016:18). However, for many, the realities of AMR are not a future threat, but a present-day matter of life and death. In addition, insufficient attention has been given to identifying and addressing the social and structural factors which make some populations more vulnerable to AMR infection than others. AMR is not evenly distributed; it is experienced along fault lines of poverty and marginalisation (Alvarez-Uria et al., 2016), constituting a social burden of vulnerability and risk that is often occluded in generalised statements about future global threats.

In this paper, we take a medical anthropological approach to decentre temporal and spatial horizons based on a future global catastrophe, and attend to the present and everyday realities of AMR for specific bedridden people living 'at the margins' in peri-urban Thailand. Through ethnographic fieldwork with 16 bedridden patients and their families, we attempted to 'follow the microbes', tracing the movement of their human hosts from community to hospital and back again. Elderly bedridden patients indeed represent a specific population vulnerable to AMR infection, due to frequent movement between community and hospital settings, as well as physiological, ecological, social, and structural vulnerabilities which present a challenge for infection prevention and control. We focus on three ethnographic vignettes of frail bedridden patients to highlight different 'faces' of AMR in Thailand and consider daily practices and forms of care for people, microbes and medicines.

## 2. Background literature and theoretical framing

Social science research in AMR is a growing field, although a primary focus has been on the use – or misuse – of antibiotics, with microbial relations less commonly studied (Lu et al., 2020). New lines of inquiry have been opened up by attending to the microbial perspective (Landecker, 2016). However, scholarship that focuses on the experiences and realities for individuals living with antimicrobial resistant microbes, as well as infection prevention and control, appears surprisingly limited. Exceptions include the mapping work of Nik Brown and colleagues (2021) who studied the careful AMR preventative practices, pathways and architectures of cystic fibrosis clinics, as well as Emma Roe and colleagues' (Roe et al., 2019) creative work on making microbes visible in an experimental hospital setting and the body of work by Alex Broom and colleagues on relating to antimicrobial resistance amongst hospital staff (see for example, Broom et al., 2021) as well as in everyday life where it amplifies vulnerability and precarity (Broom & Doron, 2022; Broom et al., 2023).

This paper considers antimicrobial resistance in elderly bedridden patients in a peri-urban community in Thailand through the theoretical lenses of precarity and care. The concept of precarity has been widely discussed as an analytic frame for engaging with the conditions of late-stage capitalism, as well as other topics. In her review of precarity, precariousness, and vulnerability, Han (2018) identifies two poles of precarity which have dominated the literature, and which we use to structure our analysis. First, precarity as the 'predicament of those who live at the juncture of unstable contract labour and a loss of state provisioning' in an age of globalisation (2018:331). This conceptualisation of precarity is commonly employed to reference precarious labour – identified with casual labour, insecure work, economic insecurity, breakdown of community and family structures, rural-urban migration, and characterised by a heterogeneous 'precariat' (Standing, 2011). This framing is particularly relevant in the peri-urban context of our study, where the majority of residents are itinerant migrant workers, dislocated from networks of economic and social support.

The second pole of precarity, conceptualised by Han as an ontological condition, can be understood in terms of the social and political arrangements that differentially distribute embodied vulnerabilities, in which 'choices' are constrained (Han, 2018). Judith Butler further conceptualises precarity as an ethical and political imperative to attend

to differential vulnerabilities, beginning with the precarious life of the Other (Butler, 2006, 2009). Following Levinas (Levinas, 1961), she identifies the 'face' (or rather 'faceless'), as a figure that represents those whose lives come to be seen as 'ungrievable' or who inhabit conditions of 'unliveability' (Butler, 2006, p. 134). In this paper, we consider some of the 'faces' of AMR in Thailand, highlighting differential vulnerability to risk, to operationalise the task of recognition, and extend the case for moral and political accountability. Following Butler, we ask, 'is there something to be learned about the geopolitical distribution of corporeal vulnerability ...?' (2004:29).

Our focus on daily practices of care follows Mol and colleagues' (2010) observation that an ethics, or ethos, of care is one of attentiveness to fragility and struggle, and of tinkering in the midst of lived, bodily realities. In this vein, Felicity Aulino's ethnography of elderly caregiving in Thailand attends to the ways in which precarity shapes subjectivities and forms of care in daily life (Aulino, 2019). Through careful ethnographic accounts of the everyday activities of caregiving, she articulates a moral phenomenology of care based on how people meaningfully provide for one another. In this context she suggests, 'care is not parsed as a matter of concern or assistance but rather a function of the ways people's attention is trained in the social world to perceive and prioritise what needs to be done, and for whom, and in what ways' (Aulino, 2019, p. 3). Hyde and Denyer Willis (2020) similarly encourage a slowing of our ethnographic pace to attend to the 'cruddiness' of daily life and consider what or who is being foregrounded in practices of care.

Following our informants (human and microbial) through the health and home care systems, we lastly turn to matters of care in the hospital. In this context, networks of protocols, soaps, laboratory apparatus, staff and patients technically bring infection control into being. However, particularly for marginalised bedridden patients, these networks extend in fragmented ways across hospital and community settings, and the locus of care (people, microbes, medicines, protocols) is constantly shifting amidst competing concerns, priorities, and demands. Consequently, operationalisation of infection prevention and control is continually negotiated and emerging as both a form and focus of care.

Building on these theoretical and conceptual orientations, we investigate the ways in which precarity informs care in practice, shaping not only vulnerability to infection, but subjectivities and forms of attention to resistant pathogens, drugs, and bodies. Tracing the movement of people and pathogens between homes and healthcare facilities, we aimed to explore the temporal rhythms, spatial epidemiology, and scales of AMR, as well as the ways in which IPC protocols and care are operationalised in practice. By paying attention to the pace and rhythm of everyday care, we highlight the temporal, conceptual, and ethical disjunctures between future apocalyptic horizons (requiring care and attention focussed on maintaining the future efficacy of antimicrobial drugs) and present-day embodied experience and care, characterised by tinkering, improvisation, and pragmatic prioritisation of competing demands.

## 3. Study setting and methods

The research was conducted as part of a multi-country research project on social science perspectives on AMR (the Antimicrobials in Society – AMIS – Hub). The study in Thailand used an ethnographic approach, including participant observation in patient homes, healthcare facilities, and other contexts of daily life, to investigate the roles of antimicrobials in different societal contexts. During initial fieldwork in 'Kai Jai', it became apparent that elderly bedridden patients represented a key population suffering from antimicrobial resistant infections, repeated hospitalisation, and associated morbidity and mortality. We therefore followed, or traced, the ways that infections were managed in the everyday lives and healthcare trajectories of these patients, to understand the realities of living with AMR for patients and their carers.

### 3.1. Study setting

The field-site, 'Kai Jai', is in a peri-urban area of central Thailand, approximately 50 km from Bangkok. The area consists of eight communities located over 12 square kilometres, with an official population of approximately 30,000 people - although many others live in the area unofficially, as a 'shadow population'. The majority of residents are migrant workers, including Thai nationals who have relocated from rural areas of the country, as well as economic migrants from Myanmar. Formerly an agricultural region dominated by orchards and rice fields, today, the area is comprised of factories, shopping malls, offices, and apartments, interspersed with disused canals and neglected orchards. The expansion of industry has altered the rhythm of daily life and community in the area which revolves around the working hours of the factories. Community gardens and open spaces have been transformed into commercial buildings, and cheap rent houses and multiple fast-food outlets to cater for the needs of workers of thousands of itinerant workers.

Healthcare facilities within the local area include 17 community pharmacies, six private clinics, two public hospitals, two sub-district health promoting hospitals, one municipality health centre, and numerous other facilities located just outside the study area. The healthcare needs of residents in the community are primarily served by the health centre, staffed by clinically trained healthcare professionals and Village Health Volunteers (VHVs). The VHV scheme was introduced in the late 1970s as an integral part of the national Primary Health Care/Health For All policy. There are currently around 1.1 million VHVs operating in both rural and urban settings, today provided with financial compensation of 1000 bhat per month (about \$30 USD). Under universal health coverage, healthcare is free for patients at the point of service, however patients commonly acquire their own supplies of medical resources, such as antibiotics, which are widely available over-the-counter without prescription from local pharmacies (Poompruek et al., 2022).

### 3.2. Study sample and data collection

Ethnographic fieldwork was conducted over thirty-one months between August 2018 and March 2021. Our research took place in four main locations: the sub-urban residential area of Kai Jai, the local district health centre, the inpatient ward of the local district hospital, and infection prevention and control policy meetings at the local district hospital.

Through existing contacts with VHVs, we identified a total of 27 patients with chronic illnesses who had become bedridden, of whom 16 patients and their carers - usually close family members - agreed to participate in the study. Of the 11 not included, six died before we could visit, and five families felt they were unable to participate. For those cases where the patient agreed verbally, the carer - usually a close family member - provided written consent to participate, we visited them at home and sometimes also accompanied them to clinics or visited in hospital, with repeat interviews over what often became protracted periods. Ages of the 16 patients ranged from 58 (a lady with Down's Syndrome who joined the study after a fall and died with a drug resistant infection during the study period) to 88 years (a gentleman who also died from an AMR infection after suffering with a number of degenerative diseases) with ten in their 60s and early 70s, and four in their early 80s (with a range of chronic illnesses including hypertension, diabetes, Parkinson's and developmental language disorders, followed by falls, amputation, gout, stroke, and myasthenia gravis that led to being bedridden). Half of the patients were women, half were men. Nine of the 16 patients acquired a drug resistant infection during the study, and none of these patients survived.

Through the course of the data collection, we learned how carers navigated with their bedridden relatives through the healthcare system, tracing their trajectories between home and the hospital, and often to the temple for cremation. Having become familiar to families over

intensely challenging and often isolating periods, our team were frequently invited to attend and participate in funerals of the bedridden individuals, sometimes as part of only a handful of mourners. Our research quickly became highly affecting, and we followed others who have studied the everyday practices of care by attending to participant's sensorial, visceral and embodied experiences (alongside our own) (Aulino, 2016; Csordas, 1993; Denyer Willis, 2020). As others have previously recognised, the ability to gain informed consent from patients living with dementia and other conditions leading to frailty can be challenging (Dewing, 2008; Glavind & Mogensen, 2022) and insights are inevitably co-produced between patients and their caregivers. We therefore focused on the narratives of carers, and observed their work in homes, clinics and in the hospital, as this related to their bedridden relatives.

To gain a wider understanding of healthcare provision, PW and PP assisted with vaccination services, clinics, and pharmacy consultations (PP inhabited a dual role as pharmacist and ethnographer), to understand how patients or their carers negotiate access to antibiotics as a form of care. A research partnership with the local district hospital also facilitated access to the in-patient ward where we became familiar with the protocols and realities of AMR care, and undertook interviews with healthcare staff and municipal staff.

We conducted in-depth interviews with two senior healthcare staff - one in a senior medical position and one a senior administrator - at the local district hospital to investigate attitudes to antimicrobial resistance and barriers to infection prevention and control in hospital and community settings. We also attended hospital policy meetings relating to IPC and AMR and followed the public discourses of policymakers. We reviewed key policy documents relating to antimicrobial resistance, antibiotic use, long-term and community care in Thailand.

### 3.3. Data, ethics and analysis

Interviews were conducted in Thai and audio-recorded with permission. Written informed consent was obtained from all participants for interviews and observation. Following data collection, recordings were transcribed verbatim and translated into English using a meaning-based approach. This entails an attempt to convey the meaning in Thai into natural grammar in English, and recognises the role of translation as active in the research process (Regmi et al., 2010), with clarifications amongst the team across languages becoming part of the interpretation and eventual analysis process. Fieldnotes from visits and observations were summarised in narrative form in Thai and translated into English using the same meaning-based approach. Case studies of the 16 bedridden patients were constructed through the information provided by carers, including whether they had been diagnosed with an AMR infection, and eventual mortality outcomes during the study.

We took a relational approach to ethics in this study, recognising the ethnographer's responsibility for those they become familiar with (Association of Social Anthropologists of the UK and the Commonwealth (ASA), 2021), and for managing relations founded on trust and respect. The embodied and intimate nature of our participant observation meant that during our fieldwork, the team would provide physical and emotional support in everyday processes of care, such as cleaning, and on occasions share food or acquire bandages requested by participants, whilst being cautious to ensure any such tokens could not be understood as coercive. The team further ensured consent was an ongoing and informed process throughout fieldwork, with verbal consent initially gained from bedridden participants, and written consent from their carer-givers and healthcare staff. Ethical approval was obtained from Mahidol University, Thailand (Ref. 159.1807) and the London School of Hygiene and Tropical Medicine Ethics Committee (Ref. 15481). All participant and location names have been pseudonymised to protect identities.

Data analysis was also ongoing throughout the fieldwork, with the study team sharing summaries of fieldnotes and interviews for

discussion and direction. Transcripts of interviews and fieldnotes were reviewed initially in Thai by PW and LS, to identify key themes and check for recording errors. Once translated into English they were reviewed line-by-line by AP, with a sub-sample reviewed by CC, to independently consider emergent themes, stories, and experiences, and how these related to wider public policy discussions on AMR and IPC amongst national and international stakeholders. After multiple analytic discussions and writing of thematic summaries between the whole team, AP developed a theoretical framework based on the emerging themes of precarity and care, in conversation with existing medical anthropological literature. The ethnographic vignettes from fieldnotes were selected to illustrate key themes and challenges in the everyday realities of our participants – patients, carers and staff. The study team is aware of the intimate and visceral nature of the ethnographic data. In sharing these commentaries, our intention is not to portray a ‘suffering stranger’ (Butt, 2002), but rather to illuminate daily experiences and evoke an embodied sense of what living with chronic conditions that ultimately link to AMR can mean.

#### 4. Findings

Using fieldnotes to directly convey the visceral and embodied nature of our findings, we present three ethnographic vignettes, focussing on elderly bedridden patients and their caregivers to consider the acquisition, production, and transmission of antimicrobial resistant infection in urban Thailand. First, through the case of ‘Uncle Din’, we explore the economic and ontological precarity experienced by bedridden migrant labourers living at the intersection of biological and social vulnerabilities, constraining choices, and resulting in disproportionate exposure to antimicrobial resistant infections. Second, recognising the ways in which precarity shapes subjectivities and embodied practices of care, we pursue a ‘descent into the ordinary’ (Das, 2007), to follow the case of ‘Aunt Muay’ and her relatives, paying attention to the temporal rhythms and movements of daily life characterised by slow tinkering and negotiations. Finally, we turn to experiences of infection prevention and control in the local district hospital, highlighting the often-competing perspectives and priorities of different actors including relatives, IPC protocols, and various healthcare professionals. Through these different articulations of precarity and care, we consider how IPC measures and AMR interventions might be reframed to recognise and address the disproportionate impact of antimicrobial resistant infection in marginalised populations in the context of an ageing global population.

##### 4.1. Portraits of precarity and geographies of vulnerability: Uncle Din

The damp smell of urine strikes us as soon as we opened the door. The man on the bed is even thinner than he was previously. He is sleeping in the dark, with a small fan and an old fridge whispering next to him. The scene makes us worry whether he is still alive. The first thing we do is turn on the light to see if his chest rises and falls with breathing. We feel relieved as we see a piece of bread moving slightly on top of his chest. We get closer but he does not respond. A rancid smell is coming from food left on a plate near his bed and left-over meals, milk cartons, and bin bags litter the surrounding area [...] His urine bag is bloated, and his back is wet with sweat and urine that flows back from the catheter. His diaper is full and smelly, indicating that he has worn it for quite some time. The Village Health Volunteer wakes him up. Uncle Din slowly opens his eyes. (PW Fieldnotes)

Uncle Din’s apartment is located back from the main road down a small alleyway which runs alongside a stagnant waterway. At the end of alleyway is a run-down, over-crowded 50-room apartment block – Uncle Din’s apartment is the very last room. As we walk along the alleyway, we catch a glimpse through the apartment windows of adults and children living in dark, crowded, stuffy, run-down rooms with poor sanitation

and ventilation. Most of the residents are Thai and Burmese factory workers who re-located from rural areas for employment opportunities in Kai Jai. Din and his wife had left the northeast province many years ago to work respectively as a construction worker and food vendor in Bangkok. As they got older, they moved to Kai Jai where Din got a job as a security guard at one of the factories. When they moved to the area, they knew no-one and rented a room alongside other workers. Din subsequently developed chronic health problems, including hypercholesterolemia, hypertension, and benign prostatic hyperplasia (BPH). He became unable to work and when we met him, aged sixty-nine, he and his wife were reliant solely on his wife’s income.

Din’s wife works away as a caretaker in Bangkok. She used to return once a month but recently has been making weekly trips to check on her husband. Whilst she is away, the responsibility of daily care of Uncle Din falls to their son, Gun. However, he works long hours as a lorry driver, and can only make perfunctory and intermittent visits to check on his father. Living what Han (2018) describes as a ‘critical moment’ and articulating the associated ontological precarity characterised by constrained choices, Uncle Din’s wife conveys her anguish in attempting to simultaneously care for her husband and earn a living: ‘I don’t know what to do. I did my best. I cannot quit my job to take care of him, he might get better but the rest of us will die.’ In the coming weeks, it was Uncle Din who passed away with a drug resistant infection. It is in this context of economic and ontological precarity that the shape of care and embodied subjectivities emerge in peri-urban Thailand.

In the next section, we follow Das and Aulino’s calls to slow our ethnographic pace to pursue a ‘descent into the ordinary’, attending to the everyday practices and tinkering that make up care of ageing bodies, antibiotics, and drug resistant microbes.

##### 4.2. ‘Descent into the ordinary’ - everyday care and AMR: Aunt Muay

The musty smell hits us as we walk inside because of the sweltering air and poor ventilation. A lady, [who we later come to know as Aunt Boon] comes out to greet us and opens the blue and orange mosquito nets. We are struck by the sight of two elderly ladies curled up on the beds sleeping. The lady on the left is Aunt Muay, and on the right is Aunt Pim. Aunt Muay can neither move nor talk and requires a nasogastric tube for nutrition. Her younger sister describes how five years ago Muay had fallen and hit her head causing her to become bedridden. She suffers from severe pressure sores, and her body is covered in bandages and smears of yellow ointment. (PW Fieldnotes)

Aunt Muay is sixty-six and one of five sisters living together in a three-story townhouse in Kai Jai. The sisters moved to Bangkok twenty years ago from their home province and later opened a grocery store in Kai Jai. The house is located down an alleyway, away from the main street. The first floor is set up as a grocery store with shelves stocked with groceries. Behind the grocery shelves the bedridden sisters spend their days out of sight of the local community. Responsibility for taking care of the two bedridden sisters falls mainly to the youngest sister, Aunt Boon, with help from her son Tep, who is the primary caregiver for his aunts.

On our next visit, we encounter Aunt Boon pushing a bicycle bigger than her up the footpath to the front of the house. She greets us and ushers us in towards the back of the house. In the small space beyond the grocery store, we find Tep preparing to care for Aunt Muay’s pressure sores. He wears gloves, ready to start. He starts by taking off the old bandages covering two wounds on Aunt Muay’s right hip. The wounds are the size of a fist and surprisingly deep. They are starting to dry out at the edge but there is necrotic skin surrounding the centre that is white and red from the mix of lymph fluid and blood collecting in the wound. He re-covers the wounds with a bandage, and, to our surprise, a sanitary napkin. Tep explains, ‘Actually, we are supposed to use an absorbent pad but it’s 10 baht each which is too expensive. The sanitary napkin is cheaper and works as good. I only use bandages on small wounds, but if it’s deep, like



this one, I'll insert a napkin. I also use it on the wounds in the pressured area. From my calculation, two sanitary napkins a day cost only 4 baht, a lot cheaper than the proper pads. Also, I don't know how long the expenses will last. She has been like this for six-seven years already."

Attempting to treat the pressure sores and control infection, Tep and his mother frequently buy antibiotics from a local private pharmacy. Tep explains, "Her wounds smell mouldy, so I use antibiotics because I thought she has inflammation, but it doesn't help. We don't have other medicine since she only has bedsores. The doctor says it's just like this." Aunt Boon adds, "If they start to have a fever, I'll go and buy this one [showing us the package of TCmycin] from the pharmacy at the front of the alley. I'll give this or paracetamol until the fever goes down. Sometimes I forget what to give because there are too many pills." She also shows us Aureomycin, saying: "This one is from the pharmacy. I give them when they have a fever". However, Aunt Boon is unclear about the application and dosage, and consults us about the pill, "Can I mash it? It's too big and hard and she can't swallow. I tried dissolving it in water, but it melts slowly and produces wax ... can I pour the wax away?... Since it can't be mashed, I just leave it in water. It dissolves so slowly. She didn't take the afternoon pill since I am too busy to wait for it to be soft enough."

In addition to caring for bedsores and procuring antibiotics, Tep is responsible for maintaining Aunt Muay's nasogastric tube and catheter. Tep tells us that Aunt Muay frequently suffers from catheter-related urine infections, for which he buys additional antibiotics from the nearby pharmacy. Muay's catheter is currently leaking, making the diaper damp, and contributing to the development of her pressure sores; however, she will have to wait until her next monthly appointment at the district hospital to have it changed. In the meantime, Tep and Aunt Boon do their best to tinker with the available resources and negotiate the ongoing healthcare needs of their relatives.

In the next section we turn to the hospital context to consider how care is operationalised in practice in this setting – where care for patients and relatives is practiced alongside care for antibiotics, infection control protocols, and key performance indicators.

#### 4.3. AMR in the hospital – an ethics of care for people, bugs and drugs

The male and female medical wards of 'Krung Si' hospital have an identical layout on the third and fourth floors of the five-storey hospital building. Each officially houses forty beds, with five at the far end marked for patients with antimicrobial resistant infections. There are no walls or partitions, but curtains are used between beds during moments of personal care. There is limited space between beds, sufficient for a tiny drawer and for the one caretaker allowed per patient to sleep on their own mat and blanket. Often more beds are assembled within and outside of the wards to accommodate more patients. The atmosphere on the ward seems like a small community, with sharing of stories, food, medical tips and even medicines. Relatives usually take the role of the caretaker, although sometimes they pay a hired caretaker to stay with the patient, as we saw for one of our bedridden cases, Uncle Sem. When the caretaker of the patient in the next bed is away, a neighbouring caretaker is often asked to stand in for them. As well as the hospital staff – doctors, nurses, interns, assistants, and maids – the ward is busy with other visitors and merchants selling food and snacks for patients and visitors. For patients with confirmed or suspected AMR infections and their relatives, the hospital experience in practice was not greatly different to others on the ward. On recognition of an AMR case, some were moved to the 'isolation area' at the end of the ward, with signs indicating AMR, hand sanitiser, and gowns provided for relatives and staff. Others remained interspersed in the wards, awaiting test results and with limited space to move into 'isolation'.

In the designated 'isolation area', we meet Grandma Som and her daughter Aunt Tuk. Grandma Som was admitted as an in-patient due to an upper respiratory infection and a broken hip. Following admission to hospital, she was diagnosed with CRE drug-resistant infection. The hospital staff moved Grandma Som to the curtained isolation area and

required all those in contact with her to wash their hands and take barrier precautions including wearing an apron and clinical gloves. However, Aunt Tuk confided, "we didn't follow it. I don't mind because it's my mum." When Grandma Som was eventually discharged from this episode, the hospital gave Aunt Tuk a manual explaining that caregivers needed to wash their hands and wear gloves before touching Grandma Som and wash her clothes separately. Aunt Tuk again explained her pragmatic reasoning for not necessarily following these protocols, "I sometimes do it, sometimes don't. The clothes are washed together. I do what I see fit and practical."

The experience of drug resistant infections layered on top of multiple other challenges for bedridden patients and their relatives. For example, Uncle Tee was admitted for surgery on a large pressure sore that had become black with gangrene. On admission he was also diagnosed with a multi-drug resistant UTI and later developed septicaemia. His wife had been staying at the hospital for almost a month without returning home – she ate at the hospital, showered in the bathroom, washed and dried her clothes on the hospital balcony and chairs, and slept on a mat on the floor beside the bed. Uncle Tee's wife, speaking about the requirement of wearing PPE and hygiene/barrier procedures when touching her husband explained: "The doctor told me that his infection was very severe. He said it is dangerous and told me to wear the gown provided in the box and clean my hands with alcohol before and after touching him. I don't do so but the doctor does. That is fine with me. I have never worn the gown, but I sometimes used alcohol to clean my hands."

The responsibility for infection control was not limited to relatives but also located with healthcare staff. Competing priorities and lack of clarity around infection prevention and control protocols meant that some healthcare staff were similarly ambivalent towards AMR protocols and procedures. Once fearful of the threat of AMR, some staff described having become accustomed to it. They explained how difficult infection control was to achieve in these circumstances and found themselves prioritising more visible forms of caring for the patients in the wards, overlooking the steps in protocols that could halt transmission: "We do think AMR is a problem, but we just neglect it because it happens all the time. We are too busy that sometimes we forget about it. Since it is common, we are not afraid of it like back when we do not know about drug-resistant infection such as CRE. We have other jobs to do, but we are well aware of it as the hospital shoulders a lot of lab expenses due to drug-resistant infection." (Male ward nurse)

In addition to the practical challenges of prioritising infection control practices, the ward staff explained their limited capacity to follow protocols for laboratory confirmation of AMR cases, revealing the ambiguity of the category as applied to cases on the ward and transmission in the community: "We cannot keep them in that long nor culture everyone's sample considering how packed we are. The doctor will decide which cases need lab assists. So far, almost 100% of the samples we sent to the lab are drug-resistant ... We cannot deal with it in the standardised way as we do not have enough beds and budget. Instead of the lab result, we rely on the doctor's ability to detect it. I think we have drug-resistant infection going in the community right now, but since we cannot provide the screening ..." (Male ward nurse)

For the hospital director, the focus of concern was orientated around key performance indicators (KPIs) essential for hospital accreditation. As a district hospital, the 'Hospital and Healthcare Standards' apply for accreditation, which includes guidelines on infection control. At the time of this fieldwork, Krung Si had yet to pass the AMR indicators set by the Ministry of Public Health. The hospital director explained that the criteria for AMR were vague and difficult to pass, and that their focus was elsewhere in the key performance indicators (KPIs), to retain their status as an accredited hospital: "The purpose of the policies (KPIs) is unclear: whether to prevent irrational use [of antibiotics] for safety, to reduce the cost, or to control the drug-resistant infection ... Personally, as we are having an unclear policy, we aim to achieve other KPIs instead of it since there are countless KPIs [...] We are not that serious to pass. Passing is good and failing is just meh. Of course, we are trying our best to reach the ministry's

KPI but with different determination. We are not aiming to solve the AMR problem, but only to follow their policies.” (Hospital director)

## 5. Discussion

These ethnographic vignettes illustrate the multiple and cross-cutting challenges involved in addressing AMR in community and hospital settings in urban Thailand. Uncle Din’s case is characteristic of an ‘invisible population’ of bedridden patients existing at the margins of care in a peri-urban area of Thailand. The environment Din inhabits is risky for infectious diseases, including AMR, as has been observed amongst marginalised groups elsewhere (Broom & Doron, 2022). Din and his family inhabit the poles of precarity identified by Han (2018) – economic and social precarity resulting from itinerant work and dislocation from community and family structures, and the associated ontological precarity characterised by constrained choices and lack of capacity to address or change the multitude of factors contributing to increased exposure and risk of AMR infection. In this context, the ‘inventory of risk’ for AMR-infection is populated by a conjunction of factors, including unsanitary and crowded living conditions, chronic illness, compromised immunity, and poor nutrition.

Din’s situation, characterised by economic and social precarity, is not uncommon. Aulino notes that the number of senior citizens living alone in Thailand has been increasing fast, whilst the size and composition of households is decreasing as family members seek employment in different parts of the country. Consequently, the capacity to care for older people within families and communities is declining, whilst the demand for elderly care is rising in the context of an ageing population (Aulino, 2019). In Kai Jai, the physical and social infrastructure has been built for a labour-intensive population. However, migrant workers frequently stay in this area upon retirement, having been dislocated from former community and family structures in other regions. This itinerant ‘shadow’ existence of migrant workers living at the margins means that many elderly patients escape the attention of local health-care organisations, falling through the cracks of social and community care provision.

In principle, elderly bedridden patients are cared for in the community under the auspices of the community health centre. However, due to the itinerant existence of migrant workers in urban areas of Thailand, many ‘fall out’ of the system, or have never been registered, and are therefore unknown to community health workers. Consequently, the ongoing daily care of bedridden patients often relies on family members juggling multiple other competing demands. In addition, further pragmatic issues such as transportation to hospital to access medical attention in a timely manner present structural barriers to adequate care. In the context of limited resources, care becomes improvised. Denyer-Willis points out that ‘problematic behaviours [such as ‘inappropriate’ use of antibiotics] are often attributed to individual fault/ignorance rather than the systemic violence encountered in inequitable access’ (Denyer Willis, 2020, p. 351) to basic infrastructures including sanitation, nutrition, sterile medical resources, transportation, and access to healthcare provision. Consequently, risk of both contraction and progression of antimicrobial resistant infection is unevenly distributed, disproportionately affecting marginalised populations.

Attending to the structuring of precarity and care through embodied ethnographies of bedridden patients enables us to consider the ways in which ‘certain arrangements of precarity ... hurt specific bodies in specific ways’ (Denyer Willis, 2020, p. 349). By foregrounding the materiality of everyday care, we aimed to explore how bodies are made vulnerable to AMR ‘in conversation with power relations’ (ibid: 350). Following Denyer-Willis, we recognise that ‘wounds matter ... a wound’s accompanying pain tells us something about how precarity can be felt, both bodily and affectively’ (2020: 349). Bodily modes of ethnographic attention to wound care further allowed us to consider how care is operationalised in practice – to consider who and what we are caring for. Uncle Si’s wife navigates economic survival alongside

providing daily care for her bedridden husband. In Aunt Muang’s case, her nephew and sister negotiate the practicalities of caring for her in the context of the reality of limited access to resources, performing care as a matter of practical tinkering and experimentation. Mol describes these negotiations as ‘persistent tinkering a world full of complex ambivalence and shifting tensions’ (Mol et al., 2010, p. 14).

Following Mol, we recognise care practices as continuously emergent, incorporating medical technologies – catheters, antibiotics, improvised bandages, surgical masks, and laboratory tests – as well as embodied experience and the subtle skills of adaptation and tinkering, such that care and technology are in the same frame, enabling an ethics, or ethos, of care that also incorporates ambiguity (Singleton, 1998), ambivalence, and even incoherence. The apparent lack of priority of AMR and infection control in the wards must be understood not only as emergent of the ecosystem of the ward in which microbes, patients, caretakers, and ward staff co-exist with limited barriers to contain transmission, but also of the political and economic system in which trade-offs between policies and incentives have resulted in a relative ambivalence around the control of drug resistant infections in the adult care wards. Here, AMR did not stand out as a state of exception. Rather, it was cared for alongside multiple matters by patients, caretakers, nurses and hospital administrators.

Through tracing the stories of bedridden people and their carers in a suburb in Thailand, this paper has attempted to illustrate various faces of AMR in ways that reveal it as at once an exceptional and an everyday challenge. By situating the acquisition of AMR in the context of economic, social, and ontological precarities, we have attempted to illustrate the ways in which care and infection control is continually emergent and constrained amidst multiple and often competing priorities of daily life and survival. This research also draws our attention to the somatic, affective, and organisational infrastructures that produce care within and between hospitals and homes.

We further emphasise the value of attending to everyday, ordinary life for patients, carers and hospital staff in understanding the ways microbes make themselves problematic. While formal infection prevention and control action continues to place handwashing at the centre of AMR protocols, we find IPC to be a system that goes far beyond the moments of hygiene or provision of infrastructure for water and soap; it is the health system, the social care system and the economic system that creates the assemblage of prevention and control. If the (non)prevention and (non)control of infection is emergent of multiple systems – of labour, social care, laboratory protocols and information systems – then IPC becomes more than a choice in a moment, but a product of multiple systems. Building on this work, we propose further research engages with the myriad experiences of those living with, and affected by, drug resistant microbes, including how precarity and care intersect to produce particular vulnerabilities to drug resistant infections and control. Further, we suggest that social research on AMR aligns with research on end-of-life care. Here, questions of what constitutes ‘good care’ differ (Cohn et al.; Driessen et al., 2021). This challenges us to reconsider what we pay attention to, whose priorities count, as well as the (inter)subjectivities of care and caring.

Global trends of ageing populations, non-communicable diseases, and social and economic precarity amplify the challenges already faced by those living with chronic ill-health, whose lives (and deaths) are co-constructed with microbial worlds. However, antimicrobial resistance – both now and in the future – cannot simply be addressed through apocalyptic narratives of future drug resistance designed to encourage present-day antibiotic stewardship or innovation. Rather, AMR requires a holistic, multi-system, and multi-scale approach, encompassing infection prevention and control procedures that enable socio-technical-material protocols to work in hospital and community settings. In addition, the ‘faces of AMR’ presented in this paper highlight the importance of recognising AMR as an issue of social inequality, and poverty as a determinant of drug resistant infection. We suggest that through further study of caring and cleaning in specific vulnerable

populations, new contents and forms of AMR prevention and control are possible, accounting for, and holding in tension, the multitude of competing demands and priorities inherent in daily life.

### CRedit authorship contribution statement

**Phakha Whanpuch:** Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Anna Peris:** Writing – review & editing, Writing – original draft, Formal analysis, Data curation. **Panoopat Poompruek:** Writing – review & editing, Methodology, Investigation, Formal analysis, Conceptualization. **Clare I.R. Chandler:** Writing – review & editing, Supervision, Methodology, Funding acquisition, Formal analysis, Conceptualization. **Luechai Sringernyuang:** Writing – review & editing, Supervision, Methodology, Investigation, Funding acquisition, Formal analysis, Conceptualization.

### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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