The experiences of adult patients receiving treatment for femoral shaft fractures at Kamuzu Central Hospital, Malawi: a qualitative analysis

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Abstract

Background: There is a growing burden of musculoskeletal trauma in Malawi, and a lack of surgical capacity to manage common, debilitating injuries like femoral shaft fractures (FSFs). Non-operative treatment with skeletal traction remains the standard of care, with surgery available only at central hospitals. Patients experience myriad barriers to care, which can result in delayed treatment and complications. We sought to understand how patients navigate the Malawian health system and the barriers they face while seeking care.

Methods: We performed in-depth, semi-structured interviews of 15 adults with closed FSFs during their inpatient hospitalization at Kamuzu Central Hospital (KCH), a public referral hospital in Lilongwe, Malawi. We additionally interviewed one patient who left KCH to seek care at a private hospital. An English-speaking study investigator performed all interviews accompanied by a Chichewa-speaking medical interpreter. Interviews focused on patients' pathways from injury to present treatment (health system navigation); impressions of the hospital and care received; and the effects of injury/treatment on patients and their families. Interviews were audio-recorded, translated, and transcribed in English. We coded the transcripts and performed a thematic analysis.

Results: We identified 6 themes: high variability in health system navigation; frustrations with the biopsychosocial effects of hospitalization; lack of participation in decision-making and uncertainty about treatment course; preference for surgery (vs. traction) based on patients' own experiences and observations; frustrations with the inequitable provision of surgery ; and patients' resignation, acceptance, and resilience in the face of hardship. Many patients receiving non-operative treatment described the devastating financial burden imposed upon them and their families by their injury and prolonged hospitalization. They felt they were receiving inferior treatment compared to surgery and suspected that richer patients were receiving more timely care.

Conclusion: This qualitative study suggests a need to standardize care for FSF in Malawi, increase availability and timeliness of surgery, and increase transparency and communication between providers and patients. These remedies should focus on improving quality of care and achieving equity in access to care.

Background

The global burden of trauma-related death and disability is high, disproportionately affecting low- and middle-income countries (LMICs).[1–4] Trauma-related disability can push the poorest patients deeper into poverty due to associated healthcare costs and decreased economic productivity.[5,6] Significant injury-related disability can be prevented with quality trauma and surgical care.[8,13] However, surgery remains out of reach for many patients, especially in LMICs.[14,15]

Malawi is a low-income country in southeastern Africa, with a population of 19 million.[20] Eighty-three percent of people live in rural areas, and half the population lives below the national poverty line.[20,21] Musculoskeletal trauma incidence is high, resulting in many trauma-related admissions at Malawian public hospitals.[22–26] Femoral shaft fractures (FSFs) are increasingly common and are potentially debilitating if not treated appropriately.[22] Approximately one adult with FSF presents to each district hospital – and 4 to each central hospital – every week in Malawi.[27] No public hospital nationwide has the minimum required resources to adequately treat FSF.[28]

The public hospital system in Malawi has three tiers: rural health centers, providing basic medical and maternity care only; district hospitals, staffed by general doctors and clinical officers (non-physician clinicians); and central hospitals staffed by specialists including surgeons. Operative treatment of FSFs – the international gold standard[29] – is performed only in central hospitals.[22] Orthopaedic clinical officers (OCOs) manage up to 90% of orthopaedic workload nationally, primarily providing non-operative treatment.[20,21] However, 24 of the 25 district hospitals and all four central hospitals in Malawi reported barriers to performing skeletal traction, the non-operative treatment that remains the standard of care in Malawi.[28,30] Patients receiving skeletal traction experience prolonged hospitalization, about 20% experience complications and 9% die in hospital.[31] Patients describe longstanding pain, emotional distress, and significant financial strain for themselves and their families.[32,33]

It is unclear how adults with FSFs navigate these myriad challenges. In this qualitative study, we aimed to understand patients' pathways through the Malawian health system to receive care (henceforth termed "health system navigation"), and to examine patients' perceptions of their treatment. We sought to identify barriers that could be addressed to improve accessibility of essential musculoskeletal trauma care.

Methods

Study design

We performed semi-structured, in-depth interviews of 16 adults who were receiving treatment for closed FSFs. We previously found that hospitals in Malawi's central region reported fewer patients admitted with FSFs than would be expected based on population size, possibly due to barriers to hospital presentation.[27] In fact, we previously reported that adults presenting for fracture care to Kamuzu Central Hospital (KCH) – the only public referral hospital in the central region – were at an increased risk of late presentation compared to other hospitals in Malawi. This may be due to relatively deficient transportation infrastructure in the central region, perceived poor quality of care or long wait times at KCH, or increased utilization of non-governmental hospitals by patients.[37] Thus, we focused our study on the experiences of patients who had been admitted to KCH.

We interviewed patients 18 years or older; actively receiving inpatient treatment for a closed FSF; and without concomitant head, thoracic, abdominal, spine, or vascular injuries. Fifteen interviews were performed at KCH, and one interview was performed at Beit Cure International Hospital, a private mission hospital in Blantyre, Malawi. Nurses on the orthopaedic wards helped identify individuals who met study inclusion criteria. We purposefully interviewed individuals that captured a diversity of age, gender, socioeconomic status and occupation, rural versus urban living situation, and experience of FSF care in Malawi.[38]

Data collection

We conducted semi-structured interviews with an interview guide, ensuring consistency of content while allowing patients to elaborate freely and raise new topics. The interview guide (Appendix 2) was designed by applying topics from the social cognitive theoretical framework including outcome expectation,[39] self and collective efficacy,[40] behavioral capability,[41] observational learning,[42] and incentive motivation.[43] A multidisciplinary team of investigators in the U.S. and Malawi reviewed and refined the interview guide for clarity and cultural sensitivity prior to beginning the interviews.

All interviews were conducted April 17–30, 2019 by the English-speaking first author (K.J.A.H.), facilitated by a Chichewa-speaking medical interpreter. After subjects provided written informed consent, interviews were conducted in private, the full conversation audiotaped, then transcribed in English. Any patient identifiers were removed from transcripts prior to analysis. The College of Medicine Research Ethics Committee (COMREC P.02/18/2353) in Malawi and the Institutional Review Board at Brigham and Women's Hospital, Boston, MA, USA approved this study.

Data analysis

The transcribed interviews underwent content analysis, which classifies textual data into themes.[44] First, two investigators (K.J.A.H. and L.A.) performed open readings of a subset of transcripts, iteratively identifying repeated concepts which were captured as codes and organized into a codebook.[45] The codebook was used to code all transcripts using the web application Dedoose (SocioCultural Research Consultants LLC, Los Angeles, CA). At regular intervals, we informally assessed agreement between coders, and reassessed the codebook to ensure it adequately captured newly emerging concepts.[46]

An inductive thematic analysis was then performed, where themes were extracted from the coded text. Transcripts were interpreted through iterative cycles of reading and reflection until dominant themes were identified.[47] We analyzed each transcript in isolation and in comparison to others to fully appreciate the contextual richness of each patient's response and differences in experience and perception.[48] This allowed us to: 1) compare patients' pathways through the Malawian health system, 2) examine patients' frustrations and perceptions of their injuries and subsequent hospitalizations, and 3) examine patients' treatment preferences and expected outcomes. We used de-identified quotations from the transcripts to support themes that emerged.

Results

Participants

Of the 16 patients, 6 were women and 10 were men. Ages ranged from 19 to 85 years. Half of patients lived in rural areas, and half lived in urban areas. The most common occupation was farmer (5 patients), followed by student (3 patients). Seven patients were injured following a fall; nine following a road traffic collision. Four were receiving skeletal traction, where a metal pin had been inserted through the proximal tibia, weight was attached to the pin with a cord and hung over the end of the bed, applying longitudinal traction on the limb and immobilizing the patient. Seven patients were in skin traction, where traction was achieved not via metal pin but via strips of cloth tape applied directly to the patients' skin. Skin traction is recommended in Malawi only for temporary stabilization. Three patients had undergone intramedullary nailing (operative treatment), and two were awaiting treatment with no form of immobilization. Five of the 16 patients had nonunions (Table 1). The median time since injury was 12 weeks.

Table 1
Key informant characteristics (N = 16)

	N (%)
Gender	6 (38)
Female	10 (62)
Male	
Age	7 (44)
18–29	4 (25)
30–44	2 (13)
45–60	3 (19)
60+	
Setting	8 (50)
Rural	8 (50)
Urban	
Occupation	1 (6)
Businessman	5 (32)
Farmer	2 (13)
Housewife	1 (6)
Informal Laborer	1 (6)
Motorcycle Driver	1 (6)
Office Worker	1 (6)
Plumber	1 (6)
Skilled Worker	3 (19)
Student	
Mechanism of Injury	7 (44)
Fall	9 (56)
Road Traffic Injury	

	N (%)
Current Treatment	4 (25)
Skeletal Traction	7 (44)
Skin Traction	3 (19)
Intramedullary nailing (post-operative)	2 (13)
None, Awaiting Treatment	
Complications	5 (33)
Nonunion	10 (67)
None	

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Thematic analysis – overview

We identified six themes: high variability in health system navigation; frustrations with the biopsychosocial effects of hospitalization; lack of participation in decision-making and uncertainty about treatment course; preference for surgical treatment (vs. traction) based on patients' own experiences and observations; frustrations with the inequitable provision of surgery; and patients' resignation, acceptance and resilience in the face of hardship. Many patients receiving non-operative treatment described the devastating social and financial burden of prolonged hospitalization. They felt they were receiving inferior treatment compared to surgery and suspected that richer patients were receiving more timely care.

High Variability in Health System Navigation

Five patients initially presented to a local health center, four to a district hospital, three to a mission hospital or private health center, and four presented directly to KCH. For the four patients who presented to KCH initially, three were immobilized on arrival with skin traction, one patient was placed in a cast. The 12 patients who presented first to other facilities underwent a variety of initial treatments including splinting (2 patient), skin traction (4 patients), and no immobilization (6). The patients who received splinting or no immobilization were all referred to KCH within 2 days. Four patients remained in skin traction for 1–2 months prior to referral. Total time since injury for the entire cohort varied from 6 days to 7 months. Health system navigation for each patient is summarized in Table 2, and representative patient pathways are shown in Fig. 1.

Table 2
Key informant health system navigation

Patient #	Time from injury to initial hospital	Initial hospital	Initial treatment method	Time from initial treatment to referral	Time from referral to current treatment	Current treatment method	Total time since injury
1	< 1 day	District Hospital	None	30 min	5 days	s/p IMN*	1 month
2	< 1 day	District Hospital	None	1 day	11 days	Skeletal traction	3 months
3	< 1 day	Mission Hospital	None	< 1 day	< 1 day	Skin traction	Unknown
4	1 day	Kamuzu Central Hospital	Skin traction	-	6 months	None, awaiting surgery	7 months
5	< 1 day	Private Health Centre	None	2 days	1 day	Skin traction	3 weeks
6	< 1 day	Private Health Clinic	None	Unknown	Unknown	Skeletal traction	1 month
7	< 1 day	Health Center	Skin traction	1.5 months	< 1 day	Skin traction	3.5 months
8	< 1 day	Kamuzu Central Hospital	Skin traction	-	< 1 day	Skin traction	2.5 weeks
9	< 1 day	Health Center	Skin traction	1 month	2.5 months	None, awaiting surgery	5.5 months
10	< 1 day	District Hospital	Skin traction	2 months	3 weeks	s/p IMN*	5 months
11	< 1 day	District Hospital	Skin traction	2 months	Unknown	Skeletal traction	4 months
12	< 1 day	Health Center	None	2 days	< 1 day	Skin traction	6 days
13	< 1 day	Kamuzu Central Hospital	Skin traction	-	< 1 day	Skin traction	2 months
14	1 day	Health Centre	Splint	2 days	2 weeks	Skeletal traction	1 month

*s/p IMN denotes patients who were post-operative after intramedullary nailing (i.e. surgical treatment).

Patient #	Time from injury to initial hospital	Initial hospital	Initial treatment method	Time from initial treatment to referral	Time from referral to current treatment	Current treatment method	Total time since injury
15	< 1 day	Kamuzu Central Hospital	Skin traction	-	< 1 day	Skin traction	2 months
16	< 1 day	Health Center	Splint	1 hour	2 weeks	s/p IMN*	1 month
*s/p IMN denotes patients who were post-operative after intramedullary nailing (i.e. surgical treatment).							

Patients recognized and expressed frustration with this seeming lack of standardization of care, especially delays in receiving treatment.

“We want an explanation about the treatment and if it is being given out accordingly. Some people are here 5–6 months. Some stay here for only 6 weeks. We wonder why so many different things are happening that are unfair.” – Male, age 25–29

Frustrations with Hospitalization

Patients who had experienced prolonged hospitalizations, usually while receiving skin or skeletal traction, expressed feelings of being trapped and powerless.

“When I was at home, I was able to go to school. I’ve been stationary here for a month. This place is like a detention [prison].” – Male, age 18–24

Patients recognized the shortcomings of the hospital system, describing limited resources, which contributed to their frustrations.

“It was difficult. There was no PoP [plaster of Paris for casts/splints] to treat me.” – Female, age 60–64

“After x-raying they referred me here because they had no equipment.” – Male, age 40–44

Patients also described overcrowded and unsanitary conditions on the inpatient wards, which they felt needed to be addressed by hospital leadership.

“There is no washing of bed sheets. This can cause a lot of problems for our health. Tell them to do laundry. We just sleep here. Nothing is being done. Look at the cockroach… They [hospital leadership] should come and see how things are here. They have written ‘health is life’ as you can see on that wall there, but look at our bed sheets, where is life in this state?” – Male, age 25–29

Moreover, prolonged hospitalization put significant strain on patients and their families. Patients worried about their housing security, childcare, and education:

“I haven’t been able to get money to pay my house rent for 2 months. That’s my worry.” - Male, age 40–44

“I am a farmer and also looking after 4 orphans. There is no one to take care of them. It’s harvest time and crops have been [unharvested] in the field since I came here in February.” – Female, age 60–64

“I used to pay the school fees [for my children] but now the resources are minimal because I’m not able to move.” – Male, age 50–54

Limited Patient Participation in Decision-making

In the setting of the many frustrations associated with hospitalization, patients also described grappling with profound uncertainty. Patients described not knowing their doctors, not being asked for their consent to procedures, and not knowing their treatment plans. Many patients also felt powerless to share their frustrations with healthcare providers.

“It’s difficult…. We do not have powers to speak or tell them [the doctors] what to do…. We have just been receiving treatment without being told what the medication is going to do in our bodies…. They just come, call names and give us treatment. So, you can’t ask anything.” – Male, age 25–29

Patients expressed deference to the doctor and often did not expect to participate in the choice of treatment.

“The patient is not supposed to tell the doctor what to do. The doctors know everything.” – Male, age 55–59

Some patients expressed an outright fear that questioning their providers or sharing their frustrations might negatively impact their care.

“It may risk my life…. I can’t speak [about my difficulties with treatment], or they will hate me more and stop treatment.” – Male, age 18–24

Preference for Surgery

Drawing from their own experiences, experiences of family members and friends, or observations of other patients on the wards around them, patients described a strong preference for surgery over skin or skeletal traction. Many felt that surgery would lead to a better outcome and quicker return to home or work.

“When patients are operated on, they walk upright and go home to continue working.” – Male, age 55–59

In contrast, patients receiving skin and skeletal traction described the pain and frustration of the prolonged treatment method.

“The treatment [skeletal traction] is not effective. I want to go home. This is more painful than surgery itself. It’s not helping because I can’t sleep. I am always in pain… I’m always crying. I’m not happy…

because I'm not healed." – Female, age 60–64

This seemed to contribute to patients' frustration with limited availability and long delays in receiving surgery.

"I was told…that I would go for surgery. It's now been 7 months without any surgery. They told me that there are a lot of people waiting for surgery. [If I had had surgery] I could have been using maybe only one crutch by now." – Female, age 20–24

Frustration with Inequitable Provision of Surgery

Many patients perceived that surgery was not available to all patients and suspected that favoritism or corruption was allowing richer patients to get surgery sooner.

"Some [patients] are well known and well-to-do people that can't be in hospital long…[I feel] very pathetic because we are poor, that's why we are still in this state [waiting for surgery]." – Male, age 25–29

"There must be something happening in secret since the hospital services are [supposed to be] free…. You can be on the [operating] theatre list and then you get sent back [to the wards]. It must be that someone has their own pocket theatre list. Why have we been put on hold for so long? …I believe there's underground corruption happening." – Male, age 40–44

Acceptance, Resignation, and Resilience

Recognizing the severity of their injury and the need for formal medical care, several patients demonstrated a sense of acceptance, and a feeling as if they had nowhere else to go.

"This is how it's supposed to go. I have to follow…. I can't go anywhere else to get treatment. This is the only place to get treatment." – Male, age 30–34

Many patients continued to show resilience in the face of tremendous hardship, frustration, and uncertainty. Even patients who described the frustrations of prolonged hospitalization also demonstrated gratitude to be in the hospital, and confidence in their providers' abilities to heal them. They described drawing their strength to persevere from their families and from God.

"I pray to God a lot. I pray for God to give my doctor strength and ideas to operate on me." – Male, age 50–54

Moreover, despite the many challenges they faced, some patients remained optimistic. This optimism seemed to be rooted in the belief that they would eventually receive surgery and return to their lives and families.

"I'm expecting that I will get a better treatment [surgery] and I will be ok. I am expecting that things will change." – Female, age 60–64

Discussion

In our interviews, adults with closed FSFs described a lack of trauma care standardization in Malawi, with limited access to surgery. Based on their own experiences and observations, many patients demonstrated a strong preference for surgical over non-operative treatment and suspected that richer patients were unfairly receiving more timely surgery. Hospitalization was fraught with challenges and frustrations as a result of limited hospital resources, unsanitary and crowded conditions, lack of participation in decision-making, and uncertainty about treatment course. Many patients also described the devastating financial burden imposed upon them and their families by prolonged hospitalization.

In patients' descriptions of their journeys, we noted a high degree of variability in utilization of immobilization in the acute injury setting, time to referral for definitive treatment, treatment method used, and duration of hospitalization. Many patients described receiving no immobilization at the health center or district hospital where they first presented. Skin traction was being utilized not as a temporary stabilization, but inappropriately as the definitive treatment for 7 of the 16 patients interviewed. These observations are concerning, because when care practices differ, quality of care and safety can be compromised.[49] In many healthcare facilities in Malawi, clinical officers – non-physician clinicians – are the highest educated providers.[50] Their level of training and competence, especially with regard to basic trauma care and fracture stabilization should be investigated. Standardization of care practices that promote adherence to evidence-based guidelines may be a useful method of improving care delivery.

Limited availability of surgery was a theme of almost every interview. Only three patients we interviewed had received surgery, one of whom left KCH and paid for surgery at a private hospital. Despite limited communication with providers regarding treatment options, patients demonstrated a strong preference for surgery, based mainly on their own experiences and observations. Patients undergoing skin or skeletal traction, or awaiting surgery for a nonunion, described the tremendous physical, emotional, and financial strain that prolonged hospitalization placed on them and their families. Haug et al similarly found that prolonged hospitalization during skeletal traction led to anxiety, indignity and emotional distress, with significant economic consequences for patients and their families.[32] Future investigation should aim to quantify these indirect costs of injury.

Patients clearly recognized the benefits of surgical treatment, which allows for early weight bearing and lower complication rates.[31] Many of the patients we interviewed perceived unfair inconsistencies in care, where richer patients preferentially received surgery. Preferential treatment can undermine healthcare delivery by worsening inequalities in access.[51,52] This issue must be investigated further in Malawi, to understand its prevalence and its root causes. Implementation of a standardized surgical waitlist, adhering to a first-come, first-serve policy within the constraints of clinical necessity and triage may decrease the ambiguity and frustrations with the inequitable provision of surgery.

Perceived barriers to healthcare access for rural Malawians include limited emergency services, limited healthcare capacity, poor health workers' attitudes, and perceived poor quality of health services.[53]

Several patients we interviewed recognized that limitations of the health system likely contributed to delayed surgery and substandard care. Central hospitals in Malawi have reported inadequate nursing staff, too few hospital beds, and unavailability of the operating room, OCOs, and orthopaedic surgeons when needed. In fact, central hospitals face challenges in providing even skeletal traction due to broken drills, limited traction pins, and inadequate traction frames and weights.[28] Improving hospital infrastructure, bolstering surgical staff, and improving availability of material resources would all likely improve the patient experience navigating the Malawian health system. However, many of the patients' frustrations could be addressed by fostering a culture of quality improvement that is accountable to patients – a culture where patients' experiences and outcomes are noted, acknowledged, and addressed.

Increased transparency and communication between patients and providers may also help address the profound uncertainty that many patients felt with regards to their treatment plans and expected outcomes. Several patients described receiving a specific treatment without giving consent. Informed consent helps patients understand treatment options and set outcome expectations, which can ultimately affect patient satisfaction.[55,56]

This study's findings must be interpreted with caution, recognizing that our patient population was not a representative sample of all Malawian patients with FSFs. We chose to focus on care delivery at Kamuzu Central Hospital, given the relatively high rates of delayed presentation previously observed there,[37] in an effort to examine challenges where they were perhaps the greatest. This was a qualitative study, undertaken to generate hypotheses. Thus, the experiences of the patients interviewed in this study are not representative, but rather demonstrate the breadth of experiences and common themes.

In our interviews, patients shared the many challenges they faced seeking care, enduring prolonged hospitalization, and bearing the perceived injustice of poor quality care and inequitable provision of surgery. Patients were forced to accept these myriad challenges without recourse. The remarkable resilience of Malawian patients shone through in our interviews. Their desperate hope for a good outcome seemed tragically linked to hope for receiving surgery, which for many patients may never come.

Conclusion

In this qualitative examination of health system navigation, we found that patients with FSFs who received treatment at Kamuzu Central Hospital in Malawi were frustrated by high variability in care. The negative effects of prolonged hospitalization for non-operative treatment led many patients to feel that surgery was a superior treatment that was unfairly made more available to the rich. Our findings suggest a need to increase the equitable availability of surgery through capacity improvement and standardization of care along evidence-based guidelines. Patients may also benefit from increased transparency and communication with providers, and a culture of quality improvement and accountability led by hospital department leadership.

Declarations

Ethics approval and consent to participate

All subjects provided written informed consent prior to the interviews. Informed consent and interview were conducted in private with the assistance of a medical interpreter. Any patient identifiers were removed from transcripts prior to analysis. The College of Medicine Research Ethics Committee (COMREC P.02/18/2353) in Malawi and the Institutional Review Board at Brigham and Women's Hospital, Boston, MA, USA approved this study.

Consent for publication – not applicable

Availability of data and materials – not applicable, no quantitative data was collected

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

K.J.A.H. designed the study, performed the interviews, analyzed the transcripts, and prepared the manuscript. L.A. analyzed the transcripts, assisted with creation of charts and figures, and assisted with manuscript preparation. L.C. assisted with study design, interpretation of results, and critically revised the manuscript. L.N.B. assisted with interpretation of results and critically revised the manuscript. N.M. assisted with interpretation of results and critically revised the manuscript. J.N.K. assisted with study design, interpretation of results, and critically revised the manuscript. All authors read and approved the final manuscript.

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Abbreviations

Femoral shaft fractures (FSFs)

Kamuzu Central Hospital (KCH)

Low- and middle-income countries (LMICs)

Orthopaedic clinical officers (OCOs)

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Figures

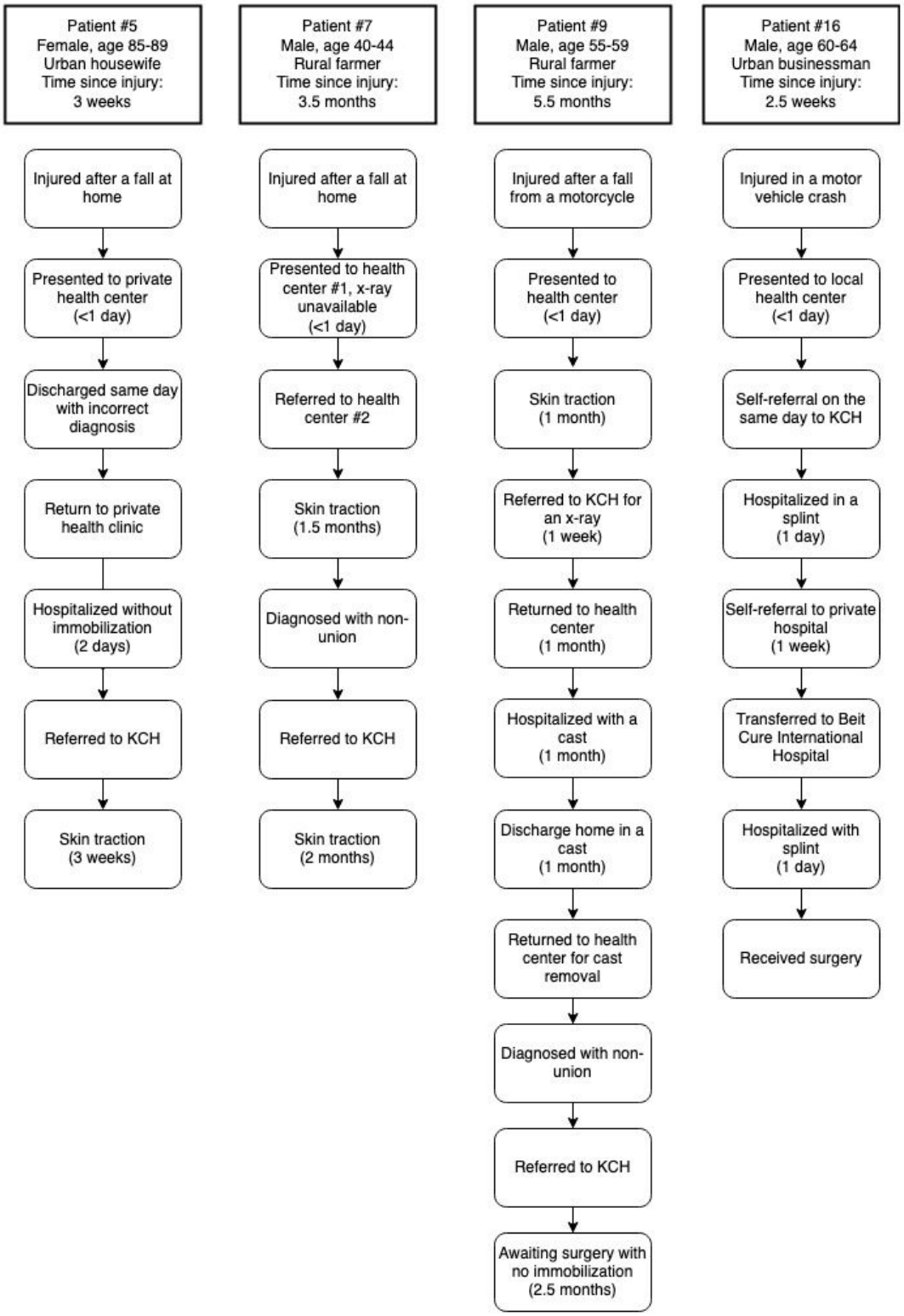

Figure 1

Representative patient pathways.

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