Literature review on the prioritisation of referrals in interdisciplinary teams

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Statement on Language

In this report, we use the term “children with disabilities” which reflects person first language. This is in line with what is commonly used in disability services and reflects the language used in the UNCRPD (persons with disabilities). We recognise that the term ‘disabled persons/people’ which is considered to be identity first or social model language is preferred by some people. Identity-first language acknowledges the fact that people with an impairment are disabled by barriers in the environment and society and so aligns with the social and human rights model of disability. We also acknowledge that some people do not identify with either term.

For further information on disability-related language and terminology, please refer to the NDA’s Advice Paper on Disability Language and Terminology[[1]](#footnote-1)

| Abbreviation | Definition  |
| --- | --- |
| AI | Artificial Intelligence  |
| CAMHS | Child and Adolescent Mental Health Service  |
| CDNT | Children’s Disability Network Teams |
| CPAC | Clinical Priority Assessment Criteria  |
| CPC | Clinical Prioritisation Criteria  |
| CSAR | Common Summary Assessment Record  |
| DNA | Do Not Attend  |
| GAD-7 | Generalised Anxiety Disorder Assessment  |
| HSE | Health Service Executive |
| IADL | Instrumental Activities of Daily Living  |
| MEWS | Modified Early Warning Score |
| ML | Machine learning |
| NDA | National Disability Authority |
| PHQ-9 | Patient Health Questionnaire-9  |
| PN | Patient Navigator |
| PNS | Patient Navigation Systems  |
| RP | Referral prioritisation  |
| SMS | Short Message Service |
| STAT | Specific and Timely Appointment Triage  |
| UK | United Kingdom |
| USA | United States of America |
| WSAS | Work and Social Adjustment Scale  |

Abbreviations

Executive Summary

Increasing waiting lists are a global phenomenon brought on by increased expectations of health services, staffing shortages and ever more complex treatments. Excessive waiting times can lead to both physical and mental health deterioration for those on the waiting list. To help manage waiting lists referral prioritisation tools and techniques have been found to be successful.

To help guide a review of the Health Service Executive (HSE) policy “National policy on prioritisation of referrals to Children’s Disability Network Teams” the HSE requested that the National Disability Authority (NDA) conduct a literature review that considered the evidence for referral prioritisation in similar services as part of the Review of Progressing Disability Services.

Aim

The aim of this research was to review referral prioritisation tools and techniques in community-based health and social care services.

Research Questions

1. What tools do other community health and social services use to prioritise referrals?
2. What are the problems with referral prioritisation tools?
3. What are the alternative methods of managing waiting lists?

Methods

A systematic search was performed across a number of electronic academic databases and grey literature sources, additionally, the professional bodies representing therapists in a number of countries were contacted.

Studies were included if they met the following criteria: (1) focused on referral or waiting list prioritisation (2) were based in a community setting (3) offered a synthesis of findings from across a range of healthcare settings.

After screening against eligibility criteria, data extraction was performed to capture key information, including the type of article, jurisdiction, and associated profession.

A narrative synthesis approach was employed to summarize and integrate findings across the included studies.

Findings

No literature that focused on referral prioritisation in interdisciplinary teams was found. The review did find evidence of four methods that were applicable to the current search: Prioritisation criteria tools, which prioritise those waiting for a service based on levels of urgency; Prioritisation scoring systems that score the relevant characteristics of a person to give an urgency score; Triage systems, particularly the Specific and Timely Appointment Triage (STAT) model which is an adapted triage system used in community health centres providing paediatric services to preschool children; and Patient Navigation Systems (PNS) which link children and families in need of a service to a wide range of services based on their potential needs and has been implemented in centres for children and young people with complex care needs.

There are also three models from the field of acute medicine that have potential to be adapted to the Children’s Disability Network Team (CDNT) model. The three models are Modified Early Warning Score (MEWS), Clinical Priority Assessment Criteria (CPAC), and Clinical Prioritisation Criteria (CPC) and are outlined further in Appendix 1.

The literature highlighted that prioritisation based solely on human-decision making can be flawed and that the use of criteria tools and systems, and the integration of health technology and Artificial Intelligence (AI) can be used to support prioritisation. Two AI-based methods are explored, one using AI Machine Learning to identify children and young people for early intervention and one integrating AI chatbots to support prioritisation in mental health services.

The literature suggests that prioritisation processes are most effective when informed by public consultation and developed through engagement with potential service users to define and understand what constitutes priority. Therefore, regardless of the chosen prioritisation method implemented, it is crucial to bridge the knowledge and experience of the professionals with the lived experiences of the potential service to achieve an integrated approach to prioritisation.

Limitations

This review sought to understand prioritisation in interdisciplinary teams relative to CDNT or similar contexts. However, no research could be found for this lens. Therefore, this review relied on research that explored multidisciplinary teams which was a key limitation for this review. Limitations of this review also included a lack of studies that were directly conducted in the CDNT context, relying on similar contexts for analysis, and exploring fields that had more structured prioritisation processes, such as those in the acute medical field.

Conclusion

The literature has shown that disagreement on what constitutes urgency remains an issue, even when structured priority criteria are followed. Four methods of prioritisation were reviewed 1) Priority criteria tools, 2) Priority scoring systems, 3) Triage systems particularly STAT, 4) Patient navigation systems. Irrespective of the chosen method, developing an integrated prioritisation approach through public consultation and engagement with relevant bodies, prioritisation can become a fair, consistent, and transparent process that is integrated and meaningful for all.

Introduction

Globally, the pressure on health systems is increasing, and the complexity of health care is increasing time spent waiting for health services. (1) However, as the demand for services increases and the availability of resources deplete, waiting lists grow to unacceptable levels. (2) A key priority for the Health Service Executive (HSE) in Ireland is to address long waiting times for treatment and care. (3) According to recent reports, there are 13,403 children waiting for services from 93 Children’s Disability Network Teams of which over 9,000 have been waiting over a year for service, with some reporting that they have been waiting for four years(4). However, this number is down from 16,000 reported waiting for service in 2023. (5) Long delays for service are not unique to Ireland and delays for service for children with disabilities can be found up to two years in England. (6)

The effects of waiting for healthcare include anxiety, depression and poor quality of life, which deteriorates with increasing wait time and was particularly noted in younger people waiting for services. (7) Where young people wait for mental health services, delays in treatment were found to exacerbate existing mental and physical health symptoms. (8) In persons with musculoskeletal disorders, the possible detrimental effects of waiting were increased pain, worsening disability, lower quality of life, and psychological symptoms. There was also evidence of higher healthcare utilisation and costs for patients who wait longer for physiotherapy services. (9)

To reduce waiting lists, the HSE have committed to increasing staffing levels throughout the CDNT services. (5) Increasing staffing levels can be supported with an effective referral prioritisation process that allows services to plan and future-proof services while optimising care resources and reducing backlogs in long waitlists. Exploring referral prioritisation alternatives can generate insight into innovative ways of improving current referral prioritisation processes. By reviewing referral prioritisation processes, quality of care delivered to individuals can be evaluated to reduce prolonged waiting times and the risk of deterioration.

Referral prioritisation

Referral prioritisation (RP) also known as waiting list prioritisation has been associated with shorter waiting times for services. (10) RP involves the ranking of service users through scoring or categorisation based on factors such as symptoms, risk of deterioration and the likelihood of the person benefiting from the intervention. RP considers those already on the waiting list for the services and allows flexibility for people to move up or down the list as their needs change. Prioritisation tools contribute to supporting the prioritisation decision process, and to its transparency and fairness. (2)

To help guide a review of the HSE policy “National policy on prioritisation of referrals to Children’s Disability Network Teams” the HSE requested that the National Disability Authority (NDA) conduct a literature review that considered the evidence for referral prioritisation in similar services as part of the Review of Progressing Disability Services.

Aim

The aim of this research was to review referral prioritisation tools and techniques in community-based health and social care services.

Methodology

Search strategy

A search was performed using the following electronic databases; EBSCO, ProQuest, Medline, SocIndex, and Google Scholar, and the following grey literature sources Cochrane Library, Social Care Institute for Excellence (SCIE) Trip Database, Global Index Medicus, National Institute for Health and Social Care Excellence (NICE), World Health Organisation, Agency for Healthcare Research and Quality, National Quality Forum, Lenus, Health Information and Quality Authority (HIQA), WorldCat and Scopus. The search strategy utilised a combination of relevant keywords, such as “waitlist\*,” prioritisation\*”, “health services\*” “referral\*” "social services," and variations thereof. Boolean operators (e.g., AND, OR) were employed to refine the search and maximize the retrieval of pertinent literature.

The research team also contacted member organisations for physiotherapists, occupational therapists, speech and language therapists, social workers and psychologists in Ireland, UK, USA, Canada, Australia, and New Zealand to seek out relevant materials.

The reference lists of key documents were searched and the lists of those citing key documents were also searched for additional material.

Inclusion criteria

Studies were included if they met the following criteria: (1) focused on referral or waiting list prioritisation (2) were based in a community setting (3) offered a synthesis of findings from across a range of healthcare settings.

Data screening

The selected studies were screened for relevance based on the titles and abstracts. Full-text articles of potentially relevant studies were retrieved and further assessed for eligibility according to the inclusion and exclusion criteria.

Data Extraction

Data extraction was performed to capture key information, including the type of article, jurisdiction, associated profession (for example Occupational Therapists, Speech and Language Therapists) and the context for referral prioritisation tools.

Synthesis

A narrative synthesis approach was employed to summarize and integrate findings across the included studies. Themes, patterns, and commonalities were identified to highlight the current knowledge in the literature regarding referral prioritisation in community-based services.

One hundred and six articles were selected for screening and after screening, a total of 46 articles were included in the review.

Findings

The review found evidence of three different types of RP systems: priority criteria tools, (11) needs-based or gains-based models, (12) priority scoring systems.

Priority criteria tools:

Priority criteria tools prioritise those waiting for a service based on levels of urgency. Two studies looked at the RP prioritisation criteria across multiple sites. (10,11,13) In an international study of speech and language pathologists, McGill et al. found that the most common RP criteria were severity, availability of resources, diagnosis, and age. (14) Infants, toddlers with feeding difficulties and children who stutter were the most likely to be classified as high priority.

A study of 55 occupational therapy service providers in Quebec looked at the priority tools used across services. An example of such a tool was given where referrals were categorised into four priority groups:

* Priority 1 was based on a person being seen within less than 7 days. Conditions within this category included acute conditions (total hip or total knee replacement, fracture, stroke…), palliative care, pressure sores, if their safety is compromised (crisis situation, new setting, return home after hospitalisation, cognitive assessment with imminent danger and/or dysphagia).
* Priority 2 was based on a person being seen within 7-30 days. Conditions within this category included loss of independence in activities of daily living and/or repetitive falls.
* Priority 3 was based on a person being seen within 1-3 months. Conditions within this category included non-acute clients, a cognitive assessment without imminent danger (such as screening or reassessment), engaging in the “Home adaptation program” through the Quebec Housing Society, were at risk of falls, and/or had requests for a wheelchair or other assistive device through governmental programmes.
* Priority 4 was based on a person being seen within 3 months or more. Conditions within this category were loss of independence in instrumental activities of daily living and leisure, a request for scooter through governmental programmes, and/or a reassessment. Those classified as having conditions outside of this criteria were classed as ‘other’ and were placed under Priority 4. (11)

In a second paper based on the same study, Raymond et al. gave details of how low priority clients were prioritised. (10) Common low-priority referral criteria included functional independence or quality of life issues where safety is not a risk, and difﬁculties with the following activities: outdoor mobility and transportation, leisure, instrumental activities of daily living (IADLs), and entering and exiting the home due to architectural barriers.

Needs based and gain based models

Hughes et al. (12) described two prioritisation models in general use in psychology services. The first was a needs-based model where those who are in greatest need are prioritised to prevent further deterioration. The most significant drawback of the needs-based model is that those with the lowest need tend to spend longest on the waiting list and can become demotivated and deteriorate. The second model discussed is the gains-based model where those with conditions that are most likely to benefit from treatments are prioritised. The gains-based models can appear arbitrary to both staff and service users and can leave those with greatest need on the waiting list.

In Ireland the Child and Adolescent Mental Health Service (CAMHS) operate a needs-based model. The CAMHS Operational Guidelines 2019 categorise referrals based on appropriate response times as either urgent or routine referrals. (15) Direct involvement from the CAMHS team and/or conducting a telephone consultation with the child or adolescent’s support network (such as parent(s) or relevant agencies) inform what is deemed an appropriate response time for the referral. An urgent referral is given where there is the presence of acute symptoms of mental disorder and there is a high risk of deterioration if not treated. Urgent referrals are responded to within three working days and are often seen as soon as possible. A routine referral is determined when a child or adolescent has acute symptoms of mental disorder that range from moderate to severe, but in the short-term their symptoms are manageable by their support network.

The Public Health Nurse (PHN) service in Ireland follows the Management of Referrals Accepted to the Public Health Nursing Service to assess two levels of priority for accepted referrals. (16) Priority 1 occurs when the referral needs to be seen within 0-7 working days. Patients placed under this category may require medication administration, wound care, urinary catheter care; are referred for palliative or end of life care; are deemed vulnerable and require safeguarding; are referred because they require home support and have limited social supports, have chronic complex medical conditions; are children with complex medical needs and require direct nursing intervention; and/or are mothers who require a first visit after having a new born baby. Priority 2 referrals are seen anytime within 8 working days up to 12 weeks. Patients placed under this category may have been referred for routine primary preventative care; referred for Common Summary Assessment Record (CSAR); have chronic stable medical conditions; are children with complex needs and require nurse support; and/or need to avail of day care, respite services or other support services.

When patients have been assigned their category, they are then categorised again based on the Framework for the Management of Patients Accepted/Caseload Profile. Patients are assigned a dependency score associated with a colour code and placed within one of four categories reflective of their nursing needs. The categories are as follows:

* Nursing Intervention 1 – Low Dependency (Code Green): The patient has no direct clinical nursing needs.
* Nursing Intervention 2 – Medium Dependency (Code Blue): The patient has a short-term estimated length of care of up to 12 weeks or requires indirect nursing care in the clinic or home environment.
* Nursing Intervention 3 – High Dependency (Code Yellow): The patient’s condition is stable, but they require direct, ongoing nursing care.
* Nursing Intervention 4 – Maximum Dependency (Code Red): The patient may have a care plan in place that includes palliative care. They require ongoing nursing care for complex needs as well as case management, coordination, and advocacy support.

Priority scoring systems

Priority scoring systems generate an urgency score based on predetermined criteria. Raymond et al. supplied an example of a priority scoring system in which, different categories within a client’s life were scored and each item totalled to give an overall score indicating their priority level. (11) In the study’s example, there were 7 sections outlining various contexts of a client’s life. Evaluations were conducted on the client’s living arrangement, such as:

* whether they lived alone (2 points), with a spouse (1 point) or in a group residence (0 points).
* no home adaptations (2 points), some adaptions (1 point) or adaptions are present in their home, such as a raised toilet seat or bath bench (0 points).
* caregiver tense and tired (2 points), at risk of exhaustion from the required care needs of the client (1 point) or having no signs of exhaustion (0 points).
* client’s condition rapidly deteriorated in recent weeks (2 points) stable (1 point). A client was assessed as being stable if they could take a sponge bath but could not take a full bath.
* walking difficulties (2 points), slight walking difficulties (1 point), no walking difficulties (0 points).
* difficulties in two or more daily tasks such as washing, dressing, or feeding (2 points).
* at risk of deterioration if they did not receive occupational therapy within a few weeks, such as experiencing pressure sores (2 points).

The child and family psychology service in Ireland also reported the development of a points-based prioritisation system in which the more severe the level of need, the higher the score the child receives. The systems score a child on 14 elements, that are based around demographic information, characteristics of the problem, and social functioning. According to Hughes et al. (12), such a system avoids arbitrary decision making, prevents cases being lost in the system and informs clinical decision making.

Triage Systems

Triage systems are considered a crucial component of care pathways, particularly for community-based child and adolescent mental health services. (17) They are used through a multidisciplinary approach that directs service users to the relevant services required for their condition. (17) Triage systems involve new service user referrals being received and added to a waiting list where clinical prioritisation determines the level of urgency of the service user’s condition. When the service user is placed on the waiting list, guidance and protocols are used to inform decisions about which service user should be seen next (18,19) by which professional, such as a clinician or an assistant (20) or whether the service user should be seen at all. (21)

Criticisms of traditional triage systems are that service users that receive a low prioritisation are at risk of waiting longer, or potentially never being seen, as new, more higher priority service users are added to the waiting list. (10,22) The lack of consensus between the professionals that make up a triage team in determining priority levels can also lead to service users being incorrectly prioritised, particularly if they are referred to a service that is not supportive of their needs. (20)

Specific & Timely Appointments for Triage (STAT) model

The Specific & Timely Appointments for Triage (STAT) model method has been implemented in community health centres providing paediatric services to preschool children during the COVID-19 pandemic (23) and is deemed an alternative to traditional triage systems. The STAT model is a principle-based model of access and triage that combines several evidence-based strategies used to improve service user prioritisation. These strategies include restoring the balance between supply and demand (23), allocating new referrals to protected initial appointment timeslots (17), combining traditional triage and initial assessment at the point of service (18), and service restructuring that involves removing certain processes that do not benefit the needs of the service user. (17) It is partly based on the observation that the rate of service users being consistently brought into a service is relatively consistent, where service users every year enter approximately at the same rate, just weeks or months behind, creating a backlog. The STAT model runs on the concept that, by clearing the backlog, services can avoid creating waitlists by maintaining service user flow. (23) This mitigates against one of the main critiques of the traditional triage model where low priority service users may not be seen at all. (10,22) Therefore, rather than prioritising service users based on the position of other service users on the waitlist, the STAT model allows service users to be prioritised against those already receiving services. (19)

In practice, the STAT model begins with a targeted, short-term intervention tailored to reduce the immediate backlog of service users. These interventions can include “employing additional short-term staff, increasing hours of part-time staff or contracting work to private providers.” (p.3) (22). Historical data of the service is used to calculate the number of assessment appointments needed to balance between supply and demand. The number of new appointments needed for new service users each week are then given dedicated timeslots in clinicians’ schedules so service users can avail of an initial appointment immediately after referral. This means that service users are seen by a clinician regardless of their assumed priority. (23) Assessments are conducted face-to-face which allow the clinician to make an informed decision on how to prioritise the service user. Clinicians can consider various options for providing care to the service user, including scheduling therapy for a later date, commencing therapy immediately, providing advice about exercises or activities, refer the service user to another service or determine that early discharge is required. (22) As the success of the STAT model is based on maintaining a steady service user flow, an assumed risk was that a hidden waiting list may be generated. However, Harding et al. found that clinicians were prioritising service users successfully for both initial and secondary appointments while using the STAT model.

Implementing the STAT model shifts the triage process away from prioritising access to a service and focuses the prioritisation of service users towards the relevant services required based on the service user’s needs. (17,22) In one Australian study from 2023, staff in five community health centres providing paediatric services to mostly preschool children presenting with physical or cognitive disabilities were trained on the implementation of the STAT model using five 2-hour online workshops over a six-month period in 2020. The online workshops trained staff on the STAT handbook’s five-step process which included:

* analysing the supply and demand of each service,
* calculating the new appointments needed to maintain the rate of demand,
* reducing the backlog through providing small, short-term interventions, advice, and direction,
* having dedicated timeslots in clinician schedules, and
* reviewing/modifying treatment pathways to maintain service user flow (23)

Results from this study showed that, during the pre-intervention stage, there were 335 children waiting for a first appointment across the five participating services, an average of 67 children per service. Post-intervention in March 2021 showed the number had fallen to 112. Two years after the study commenced, two services were found to be operating with no waitlists as a result of implementing the STAT model, with the overall total number of children waiting reduced by 42%. (23)

This study was conducted during the COVID-19 pandemic, which meant that one challenge to implementing the STAT model was staff turnover and recruitment issues that left required positions vacant. (23) It also meant that one of the benefits of the STAT model utilising face-to-face assessments as part of service user prioritisation (22) could not be met with COVID-19 restrictions, leaving many service users attending virtual assessments that were not appropriate to assess their condition and ultimately adding to the backlog. (23) However, despite this, the implementation of the STAT model during COVID-19 was shown to be a strength of the model as it demonstrated how prioritisation of service users can be conducted successfully, all while contributing to reduced wait times even during a global pandemic. The STAT model was found to not generate hidden waitlists as was a predicted risk of the model, highlighting that using this model supported clinicians to successfully prioritise both initial and second appointments equally. (22,23)

As concluded by Harding et al., the STAT model is deemed to be “well suited to single discipline or multidisciplinary services that treat service users over a series of appointments, allowing service providers to exploit flexibility in scheduling a mixture of new assessments and review appointments” (p.3) (19), with the most successful results generated from a 2023 Australian study related to the prioritisation of children with physical and cognitive disabilities during the COVID-19 pandemic. (23)

Patient Navigation Systems (PNS)

Patient navigation systems (PNS) are an innovative way to support prioritisation by linking potential service users and families to a wide range of services based on the potential service user’s needs and identifying the healthcare providers willing to treat them. (24) PNS have been most successful when applied as a context-based, integrated approach designed based on the needs of the potential service user (25) within primary care services, specialist care, and community-based health and social services. (26) It has worked effectively within fragmented healthcare systems (27), particularly for children with complex care needs. (28) PNS can support effective prioritisation by ensuring service users are allocated to the necessary services and redirecting those that do not need treatment through providing relevant education or advice. (29)

In PNS, patient navigators (PN) help support service users and families in accessing healthcare resources and referring relevant service users through to those existing services. (29) By identifying and pairing up the service user’s needs to the appropriate health services, PNS can mitigate against the inequality of care that commonly occurs during service user prioritisation processes. (30) Variation in the implementation of PNS comes from the range of purposes it can be implemented for. PNS have been established for 1) basic navigation; 2) arrangements and referrals to services; 3) care coordination; 4) treatment support; and 5) clinical trials/peer support. (31) PNS can support a multitude of these areas, but this depends on the qualifications and experiences of those appointed as PN. For example, Lalji (29) explains how PN can have medical or non-medical backgrounds, such as working as health workers, community health workers, or nurses.

Wells et al. (31) outlines three models related to PN roles and responsibilities. In the first model, PN do not need a clinical degree but must have certain qualities, such as being personable. This model would not be suitable if service user prioritisation required a clinical assessment of need at the first point of contact to determine urgency. However, this model would be effective in redirecting service users who do not require the use of health services but may benefit from education or advice. The second model appoints PNs with specific accredited training who can provide screening, diagnostic and treatment. This model would be appropriate for the prioritisation of service users, as service users can be assessed initially and directed to the relevant service following a professional evaluation. The third model suggests using a multidisciplinary team of lay and professional navigators where standards of accredited and nonaccredited staff are clearly defined within the team to ascertain the role and responsibilities of each PN. (31) This model would also be effective for the prioritisation of service users, as service users can benefit from the PNS integrated care approach (27) providing an assessment of need, service user education, support self-management, develop care plans, and schedule referrals and appointments, all while having a direct contact who can liaise with different service providers and sectors when needed. (3)

NaviCare/SoinsNavi

In Canada, a patient navigation centre for children and young people with complex care needs was established in New Brunswick called NaviCare/SoinsNavi. It was a research-based service user navigation centre for children and young people who were 25 years and under with the aim to support their physical, mental, emotional, social, and cultural needs within an integrated care approach. (27) It was housed in a university so that PNs, alongside a team that included researchers, could advocate on behalf of their service users’ needs if they were not being met and using this information to explore how services could help their service user in achieving these supports.

The implementation of NaviCare/SoinsNavi involved two PN, one being a registered nurse and the other a lay navigator. They managed the day-to-day operations of the centre including coordinating and supporting transitions between care services and connecting children and families with relevant resources. There was also a team that included three co-directors, seven volunteers with backgrounds including being a parent of children with complex needs or young adults who have grown up with complex needs (who also form the Family Advisory Council), and several trainees and researchers. (26) At 70%, the most common purpose for service users contacting the programme was to request referrals to local services and resources (26), with the typical service user being a male between the ages of six and eleven with autism. (27)

There was no diagnosis needed for children and young people to access the centre’s services, with referrals from a physician or self-referrals accepted. (26) Once accepted, the service user’s needs were assessed by the registered nurse PN who then decided to keep the service user in their caseload or delegate to the lay navigator who would have focused more on directing for education or advise purposes. (27) The service user would then work with the PN to address the service user’s needs and set goals to support them. To help their decision-making regarding the service user’s referral process, the PN would network with the Family Advisory Council made up of seven volunteers (parents of children with complex needs or young adults who grew up with complex needs). The navigators had the option to consult with the service user’s care team, care provider and community stakeholders to assess how to support any unmet needs. The PN would then work to support these unmet needs and once resolved, the service user’s case was archived. The option for the service user to return at any time was given, particularly if they found that new needs were arising. (27) Thirty four percent of service users were working with the PNs for 1-3 months before being discharged, with 45% being discharged after 4-7 months. (26)

An identified limit of NaviCare/SoinsNavi is that adding a PNS to an already confusing system can only exacerbate the fragmentation of the healthcare services. (27) Therefore, if using an approach like NaviCare/SoinsNavi, it is recommended that PN have clearly defined roles that distinguish them from other members of the service user’s care team, and to be an active member in all care teams that involve the service user’s needs. This ensures consistency for all involved and a holistic approach for the service user. (27) MacNeill et al. also critiqued that NaviCare/SoinsNavi would have had better impact if it was not housed in a university but established in a type of healthcare clinic to make care more integrated and accessible. (26)

NaviCare/SoinsNavi is looked upon as an example of how PNS can improve the integration of care by ensuring service users are not subjected to inconsistent prioritisation processes but are accepted with or without a referral and assessed clinically. Together with their PN, service users had a say in the goals that were set and the type of support that they needed. Overall, NaviCare/SoinsNavi has been deemed a novel integrated approach to meeting service user needs as they need them, with particular success in supporting effective prioritisation of children and young people with complex needs. (26,27)

The problems with prioritisation systems

This section examines a number of challenges with the prioritisation systems outlined above. These include difficulties with defining urgency, the reliability of prioritisation, differing views of service users and the problems with human bias and error.

Defining urgency

Defining urgency is a critical problem in referral prioritisation systems and definitions of urgency vary based on the context of the health service being provided, the professionals’ interpretation of the condition, and the features of the service user.

It has been found that patients struggle to distinguish between service types because terms such as ‘urgent’ or ‘emergency’ are interpreted by individuals differently. (32) Relying on the patient to determine which service they require based on their own understanding of their condition has been criticised, as this places the onus on the patient to determine their level of urgency to the health care professionals. If patients struggle to communicate their condition as they experience it, they may be categorised a lower priority level when their needs require more immediate attention, further contributing to the inequality of care. (33) For example, the USA promotes a symptom-based determination of urgency where the responsibility lies with the patient to decide the urgency and suitability of a service that they need, while the decision to intervene is that of the health care professional. (34)

Each professional’s interpretation of urgency has been found to vary even when the same standardised criteria are utilised. (35) For example, nurses were found to be more likely to use time-based priority criteria in combination with a person’s context, based on whether the service users or the family was upset, which led to differing views between nurses and clinicians on prioritisation. (36)

The literature also suggests there is a strong tendency for health care professionals to define urgency in relation to the lack of urgency for the service user (35), or judge certain age groups as being more deserving of care, for example the elderly. (37)

Reliability of prioritisation

Harding et al. looked at evaluating how reliable prioritisation processes were in a community rehabilitation programme associated with occupational therapy and physiotherapy. (20) They found that, while 70% of clinician professional priority ratings agreed, 30% of the ratings disagreed. After the professionals attended a training programme about the prioritisation process, they still disagreed on where service users should be prioritised 30% of the time. (18)

Inconsistency between health care professionals when deciding where to prioritise a service user can result in service users being positioned incorrectly on waiting lists and extending already long waiting lists. By waiting longer, there is the potential for the deterioration of the person’s condition, or an increase in the level of severity of their symptoms from moderate to serious. (38) This inconsistent prioritisation then puts additional strain on other services as service users seek out immediate attention because of their deterioration.

Service user perspective

Those who will potentially use the services and professionals also disagree about prioritisation, with service users more likely to prioritise quality of life issues and professionals more likely to prioritise medical issues. For example, a survey issued to occupational therapists, elderly persons, and adults of any age with a physical disability found that the professionals and two service user cohorts had differing opinions on what constitutes a priority. The elderly and adults with physical disabilities believed having an inability to exit and enter the home should be of high priority. However, occupational therapists gave high priority to service users falling, with quality of life, or participation outside the home receiving low to moderate priority, even if that included their inability to conduct basic hygiene tasks, such as showering. (39) Additionally, Carrier et al. also found that people who use services are more likely to prioritise improving their quality of life whereas, healthcare professionals are more likely to determine priority status based on clinical implications of the condition and institutional and system requirements as preventing adverse events and improving productivity. (40)

Human Bias and Error

Staff in health care services have been recorded as experiencing two types of bias when dealing with waiting list prioritisation. These are cognitive bias and implicit bias.

Cognitive bias

Cognitive bias relates to how professionals use and apply clinical data. (41) Cognitive bias may occur directly or indirectly based on several factors. These include whether there is priority guidance or standard priority criteria established, whether these are known, how difficult they are to interpret or implement, if the guidance and priority criteria are disputed by professionals resulting in an uninterest in applying them, and/or how complex the health services are. (42)

Implicit bias

Implicit bias occurs when professionals use clinical data and apply it through the lens of age, race, gender, and socioeconomic status to inform their decision-making. Having awareness of implicit bias is vital to mitigate against prioritisation that may be rooted in stereotyping or prejudice. For example, a study of public, non-paying service users in an Australian public hospital found that favourable treatment was given to service users who were more advantaged from a socioeconomic standpoint, providing them with higher priority over those with a lower socioeconomic background (43). Job through a scoping review found that service users with a low socioeconomic background, but who were more assertive, were more likely to be prioritised higher by professionals compared to service users who were less assertive (44). This highlights how the level of assertiveness of the service user can influence the decision-making of the professional in prioritisation. (45)

Reducing bias

The first recommendation for reducing bias is to acknowledge and recognise the existent of bias in prioritisation processes. By understanding what it is and where it is likely to happen, professionals become equipped in making more informed decisions. (42) Secondly, an issue that causes the likelihood of bias-based decision-making in prioritisation processes is when professionals are unclear about their roles, responsibilities or how to apply priority criteria. (46) Therefore, it is recommended that objective priority criteria are established (18) and tested before a service-wide launch to ensure its implementation in practice is clear and effective for professionals to apply, as well as clarifying professionals’ roles and responsibilities within structured decision-making processes to support prioritisation. (46)

Training as an approach to mitigate against professional bias has mixed results. For example, while O’Sullivan and Schofield believe that bias-specific training can be an immediate approach to reducing bias, (41) Vela et al. believes that time-limited training will not lead to long term change. (47) Harding et al. found that implementing specific training did not improve the decision-making outcomes of professionals during group-based prioritisation decision-making, but in fact showed the professional agreement of prioritisation remained the same at 70% with or without training. (18,20) Therefore, training has mixed responses, where ongoing training may have potentially more benefit in practice compared to once-off training that may not reduce bias decision-making in the long run.

Health Technology

Human error and bias can result in service users being incorrectly prioritised according to their needs because clinical variables and non-clinical variables are difficult to interpret and separate from each other. (48) To mitigate against human bias and error and improve on decision-making accuracy, healthcare systems have integrated the use of health technology, such as machine learning and AI chatbots. By implementing an automated approach using health technology, particularly for processes that involve large amounts of data, referral prioritisation can become more consistent while increasing fairness and accuracy. (48)

Machine Learning

A challenge of referral prioritisation is that large amounts of data are generated through increasing number of referrals. It can be difficult to analyse and interpret these vast data sets when deciding where to prioritise service users. Machine learning (ML) is an application of AI that can analyse large amounts of data from multiple sources and is seen as useful for analysing large referral information to inform priority setting.

In one study, a variety of ML models were evaluated to see how useful they were in the identification and prioritisation of children and young people for Early Help assessment and support in the UK. (49) Neto et al. collected 14,360 records of children and young people under 18 years and used various ML models to identify which ML model was the best for predicting which children would need to be referred to Early Help. (49) Cases were categorised under the following three priority levels:

* Category 1: Require Early Help support - the most intense type of intervention
* Category 2: Some action - referral to less intensive services such as group activities or schemes that run during the school holidays, or to external services
* Category 3: No action - additional support is not currently required

This study demonstrates that the ability of ML models to support in the prioritisation of service users, such as children, proves challenging, as currently ML models generate a high proportion of incorrect prioritisation, leading to children missing out on service supports they require. Neto et al. concluded from their study that “It is not considered justifiable, certainly at this stage, for referrals and allocation of provision to be driven by AI.” (p.401) (49)

AI chatbots

AI chatbots are gaining more attention as a solution to referral prioritisation, where service users work with AI to assist in categorising themselves in prioritisation processes. (50) AI chatbots have been looked at as an approach that removes social barriers that may otherwise prohibit people from engaging with healthcare services, particularly related to mental health as a result of perceived stigma or judgement. (51) AI chatbots mimic human interaction through written, oral, and visual communication (52) and provide information and analysis as required. In recent years, AI chatbots have become more advanced in their methods using NLP (53) which allows unstructured text to be analysed. This is crucial for AI chatbot systems as they are often established to interact with a variety of people with diverse writing styles in order to interpret meaning and refer service users accurately. More advanced AI chatbots can use text, voice, and facial expressions to provide more person centred support, making engagement more accessible for those who may have difficulties with text-based communication. (52)

Limbic Access

Limbic Access is an AI-enabled chatbot that was integrated with a mental health service’s website. (54) Limbic Access enhanced the standard self-referral process by collecting service user health information and using this to analyse the service user’s suitability for the mental health service. This ensured that that those who self-referred had already been initially screened for relevance to the service. The AI chatbot collected clinical information about the service user using Patient Health Questionnaire-9 (PHQ-9), Generalised Anxiety Disorder Assessment (GAD-7), the Work and Social Adjustment Scale (WSAS) and additional screening questions (54) to establish whether the service user was most suited to the service. The study found that there was a 31% increase rate in referrals for ethnic minorities. Limbic Access supported in the referral process of 157,000 service users with 14,000 of those being new service users to connect with the service. The increase in referrals did not negatively impact on the number of service users accessing clinical assessments. Therefore, the use of Limbic Access not only improved access to relevant ethnic minorities, but did not increase waiting times for treatment, ensuring that those who were referred had conditions deemed appropriate for the service provided. (54)

Limitations of AI

The effectiveness of AI is currently limited by the lack of transparency in the decision-making process and the data it uses. (49) An AI model may be biased if it was developed using incomplete, incorrect, or prejudicial data. For example, a study found that ChatGPT (GPT-4) would rank resumes of people with disabilities lower than those without disability, highlighting a prejudice in AI against people with disabilities. However, it was shown that this prejudice can be vastly reduced by incorporating AI with principles from diversity, equality and inclusion training and disability justice. (55) If AI was integrated into referral prioritisation processes, it would need to be evaluated to ensure that prejudice and bias were identified and mitigated, echoing that currently to rely solely on AI for prioritisation is not an effective method as of yet. (49)

Alternative methods of waiting list management

Managing Did Not Attend rates

Do Not Attend (DNA) rates are vital when it comes to prioritisation, as a high DNA rate can mean healthcare professionals have multiple, unfulfilled timeslots that could have been allocated to available and willing-to-attend service users. (56) For example, in Chile, the use of text message reminders decreased the DNA rate by 30%, particularly for younger cohorts, while also reducing the risk of service users being removed entirely from waiting lists for failing to attend. (57)

Using appointment letters that are written with behavioural insights (including personalisation, day in words and the consultant’s name) have been shown to reduce Did Not Attend (DNA) rates, with one study finding that 1 in 8 people changed their behaviour simply because of the phrasing of their reminder letter. (56) Behaviour changes can include service users giving advance notice that they cannot attend the appointment, allowing it to be referred to the next service user, or confirming they can attend and ensuring their appointment slot is fulfilled. This way, service users are empowered to make informed decisions about their availability without being penalised through instant removal because they could not attend, while also identifying open slots that waiting service users can use. (56) Using Short Message Service (SMS) reminders instead of written letters is deemed to be a more convenient and accessible way for notifying and communicating with service users about their appointments. (56,57) One notable study has shown how SMS notifications can be used to effectively manage waitlists by contacting waiting service users about a last-minute available slot for an appointment and mitigating against low priority service users not being seen. (56)

In 2015, Sutter Health in California piloted FastPass to allow service users to opt-in to being notified about cancelled appointments that they could avail of. Notifications about available slots generated from service user cancellations were sent out in nine batches throughout the day where available service users could opt-in to attend same-day appointments and appointments scheduled up to seven days in advance. Each batch offered a slot to five randomised service users simultaneously, with the offer expiring either when it was accepted on a first-come, first-served basis or after a 30 minute time lapse. (56) Out of 177,311 FastPass offers, 27% were for same-day appointments or 2-7 days ahead (35%). Accepted offers saw most service users seeing their appointment times advance by 8-30 (47%), followed by 0-7 days (29%), and 31-358 days (24%). It was found that available slots were more likely to be taken by service users aged 18-49 years with acute conditions, whereas chronic condition service users were less likely to avail of a cancellation slot as they had multiple appointments scheduled over a period of time. By prioritising those who could be available at relatively short notice, the FastPass system was most effective in reducing the backlog of service users waiting longer with acute conditions that may potentially have been pushed down the waiting list had they been categorised as low priority. (56)

In the CAMHS service in Ireland the guidelines for cancelled appointments say that if an appointment is cancelled in time, it can be offered to someone else and reduce waiting lists. When booking the initial appointment, the service should be flexible and make the appointment in consultation with the parents in order to minimise the risk of non-attendance. Further, all initial appointments should be communicated to the parents in writing with a copy to the GP and the original referral agent. CAMHS staff should be conscious of communication barriers and should confirm appointments at least 2 weeks in advance of the appointment and where possible a text reminder should be sent as a means of encouraging confirmation and reducing non-attendance.

SMS technology to support the prioritisation of service users by reducing backlogs of acute conditions and utilising last-minute available appointment slots has its challenges. Illiteracy has been found to be a major factor in determining how effective SMS reminders or notifications are in practice. For example, in African regions, Demsash et al. found that some populations are unable to read text messages, therefore unable to benefit from this approach. (58) Cultural factors such as English as a preference for SMS communication automatically excludes those who do not speak English from benefiting.

A hybrid approach to delivering reminders and notifications of appointment slots would ensure maximum reach for service users and prevent service users being unnecessarily removed from waiting lists through using SMS, phone calls and in-person visits. In the case of available slots, service users can put themselves forward to be prioritised if they are available for a last-minute appointment ensuring that empty appointment slots in the professional’s schedule can be used effectively to treat service users regardless of their priority level. (56) Also, removing service users from waiting lists because they did not respond to written correspondence is not a justified rationale for removing waiting service users from waiting lists, as numerous reasons may be at play for their lack of correspondence. Therefore, using a hybrid approach to correspondence that meets the preferences of service users would ensure that service users prioritised for removal are based on their choice of no longer needing an appointment or being unavailable, while allowing other service users waiting to be prioritised to avail of the cancellation slot. (56–58)

Public Consultation and Engaging with Service Users

To improve on the implementation and effectiveness of prioritisation processes, prioritisation decision-making structures must be transparent to the public. (43) This includes developing meaningful, structured criteria in consultation with the public and with those who have relevant experiences to determine what is high or low priority status within specific contexts. By involving members of the public and showing them how outcomes have been decided, trust in the healthcare system is increased and the reliability of the prioritisation processes improves overall. (39) Furthermore, engagement and open dialogue with service users about prioritisation processes can empower service users, where they are recognised and appreciated for their views on matters that affect them. (45) Thus, having transparent decision-making structures ensures prioritisation is fair, objective and meets the needs of service users as required. This can help mitigate against potential prejudice, stereotyping and bias that may otherwise play a significant role when prioritisation solely relies on human decision-making. Promoting transparency and being open with decision-making outcomes when using any source of health technology can also support the effectiveness of prioritisation. Involving the public and potential service users in the design of technology integration for prioritisation can reduce issues surrounding data protection and privacy that may generate mistrust in the overall system.

Therefore, ongoing engagement and collaboration with the public, those who use the services and those who may potentially use the services can bridge the valuable firsthand experiences of service users with the clinical knowledge of the professionals to generate an integrated approach to prioritisation that is fair and transparent for all. (39)

Limitations

Relying on literature that were not directly conducted in the CDNT context was a key limitation of this study. This resulted in a collection of studies that were conducted in similar fields but may not fully capture the reality of prioritisation processes required for CDNTs. Very few studies situated in similar contexts as CDNT highlighted their prioritisation processes in detail. Studies within a children’s disability services context tended to talk broadly about prioritisation without outlining the specific details of the approaches taken, unlike the acute medical field where prioritisation is discussed more definitively. This resulted in a lack of models that could be explored and potentially adapted to CDNTs. Finally, while this research aimed to explore prioritisation processes within interdisciplinary teams, no relevant study reflected this approach. Therefore, the literature review relied on studies that were situated in the multidisciplinary context.

Conclusion

This literature has explored the ways that prioritisation can be implemented within a variety of contexts, such as occupational therapy, speech and language therapy, paediatric services, and child and adolescent mental health services, among others. The literature has shown that professional disagreement on what constitutes urgency remains an issue, even when structured priority criteria are followed. Having structured priority criteria are useful so professionals have a benchmark to guide them when evaluating priority. However, with the potential influence of human decision-making bias and error, alongside the multiple ways priority criteria are designed in-house, this can cause incorrect prioritisation, leading to the deterioration of a person’ condition and longer waiting lists. The literature explored various methods for prioritisation including priority criteria tools and priority scoring systems, triage systems using the STAT model, and PNS alongside discussions about health technology and the influence of human bias and error. Irrespective of the chosen method, whether it is driven by human decision-making, technology, or both, developing an integrated prioritisation approach is most effective when consulting the public and those associated with the services. Through public consultation and engagement with relevant bodies, prioritisation can become a fair, consistent, and transparent process that is integrated and meaningful for all.

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