

## Drug and Therapeutics Committee Structure and Roles in Hospitals: A Scoping Review

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### Abstract

*Drug and Therapeutics Committees (DTCs) have been identified and promoted as a fundamental model in advancing the rational management and use of essential medicines and health supplies in hospitals since the 1970s. However, there is still a scarcity of comprehensive literature on their current structure and actual roles performed in various countries. We conducted a scoping review using the Pubmed and ResearchGate databases and included eligible articles published between 2010 and 2023, to assess the structure and roles performed by hospital DTCs. The database search yielded 47 potential records, but only seven of these were eligible for inclusion. Studies included were from both high-income and low- and middle-income countries. The structure of DTCs is generally similar across these countries, with minor contextual variations. All DTCs are heterogeneous in composition and contain both medical and non-medical staff. The DTC leadership comprises a chairperson who is usually a senior clinician, and a secretary who is usually a pharmacist. The majority of the DTCs have at least one sub-committee, and antimicrobial stewardship is the most common. The DTCs still perform their customary roles, although their role scope is expanding. In some countries, the DTCs have taken on additional roles due to the evolving medicines management and use problems, and technologies. There is however still a dearth of recent primary data on the structure and roles of DTCs in many countries. We recommend more primary research to understand the status of DTCs in various countries and to provide more insights into the existence and functionality of the DTC sub-committees.*

**Keywords:** Drug and Therapeutics Committee; DTC; Irrational Use; P&T Committee; Review; Hospital.

### Introduction

Essential medicines and health supplies (EMHS) are vital in saving lives and improving health outcomes and constitute up to 40% of the health facility annual budget [1-4]. Despite this substantial expenditure on EMHS, there is still wide-spread per capita wastage from inefficiencies and irrational use of the same [3,

5]. In fact, the World Health Organization (WHO) estimated that up to 50% of medicinal products in the world are prescribed, administered, or sold inappropriately [1]. Irrational EMHS use manifests in several ways including but not limited to failure to prescribe, dispense, and use medicines as per standard treatment guidelines, use of too many medicines (polypharmacy), inappropriate use of

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antimicrobials, overuse where not indicated, underuse where indicated, inadequate use for chronic diseases, overuse of injections, self-medication and use of expensive low-efficacy, and low safety drugs [6]. Irrational EMHS use has significant negative consequences on the health and economic outcomes both within the health facility and the community [1, 2]. It increases the incidence of adverse drug reactions (ADRs), therapeutic failure, prolonged hospitalization, escalation of drug resistance, inefficiencies in EMHS procurement, and increased health-care costs [5]. The problem of irrational use has been mostly attributed to the fact that the management of EMHS is complex and involves multiple disciplines and stakeholders [3].

A Drug and Therapeutics Committee (DTC), also referred to as a Pharmacy and Therapeutics Committee (P&T Committee) or a Medicine and Therapeutics Committee (MTC), is a forum intended to bring together all key stakeholders involved in EMHS management and use, and may exist at national, district or hospital level [3, 7, 8]. It is defined as a professional body that oversees the use of medicines in healthcare organizations [5, 9]. The World Health Organization has identified and promoted DTCs as a fundamental model in advancing the rational management and use of EMHS since the 1970's [2, 5, 10]. The expected DTC roles include advisory to health workers on matters of medicines use; development of drug policies; evaluating and selecting medicines for the formulary; developing, adapting, and implementing standard treatment guidelines (STGs); assessing medicine use to identify problems; conducting effective interventions to improve medicine use; managing ADRs; and handling medication errors [3, 10-12]. It is noteworthy that DTCs have attempted to improve the monitoring and promoting the quality use of medicines across countries amidst the challenge of pharmaceutical companies' promotional activities, thus containing hospital costs especially among developed countries [10,

13]. The DTC concept has gained popularity and acceptance in recent years, especially with advances in medicines technologies, constrained healthcare budgets, the rising healthcare expenditure, and the need to control pressure from pharmaceutical companies on health practitioners [13, 14].

Despite the crucial role played by DTCs in promoting rational EMHS management and use, there is still limited data on their structure and actual roles performed in various countries. There is particularly a deficiency of comprehensive data on current trends and status of DTCs among high income and low-and-middle income countries. We came across only two reviews conducted 12 years ago [15] and 10 years ago [16], respectively. However, one review focused on only developed countries and did not analyze DTC roles, while the other had a different objective, to suggest a framework for analyzing the structure and activities of DTCs and so did not provide sufficient information. It is therefore necessary to understand and compare the status of DTCs, especially across countries with differing socio-economic status. This would go a long way in informing further crucial research needed in this area, and guiding interventions to enhance the functionality of DTCs and scale up their impact. This review aimed at assessing the structure and roles performed by hospital Drug and Therapeutics Committees across various countries.

## **Methods**

### **Study Design**

A scoping review was conducted to answer two research questions "What is the current structure, and what are the roles of Drug and Therapeutics Committees in Hospitals?". The eligible articles on Drug and Therapeutics Committees were selected, extracted, charted, and analyzed to present and summarize the existing evidence. The study was designed and conducted in accordance with the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) [17]; the PRISMA

extension for scoping reviews [18]; and other related guidelines [19]. An assessment of the risk of bias, and an appraisal of the methodological quality of the studies selected were not done, as these are not considered mandatory for scoping reviews [20, 21].

### **Eligibility Criteria**

We included all articles that assessed Hospital Drug and Therapeutics Committees, were primary research, were published in peer-reviewed journals, and were published between January 2010 and June 2023. We excluded studies that were duplicated between the databases, were not published in the English language, were conducted at only one hospital, were review studies, and those whose abstracts and full text were unavailable or inaccessible. Studies conducted at one hospital were excluded due to their limited perspective, while reviews were excluded due to their associated selection and publication biases [22].

### **Information Sources**

A literature search was performed in the Pubmed and ResearchGate databases from January 2010 to June 2023. This period was selected based on the scope of the previous closely related review studies we found [15, 16].

### **Search Strategy**

The search strategy was developed by the principal researcher and reviewed by two of the co-researchers. We systematically searched the Pubmed and ResearchGate databases to identify relevant literature from January 2010 to June 2023. The search terms used were “Drug”, “Medicine”, “Pharmacy” and “Therapeutics committee”, along with the Boolean operators “and” and “or”. Our search phrase was “Drug OR Medicine OR Pharmacy AND Therapeutics Committee”. Additionally, reference lists for the eligible studies were searched to identify any additional studies for inclusion in the review.

The identification and screening commenced with a quick assessment of the article titles by two reviewers, followed by screening of the abstracts and full articles. Any disputes that arose during the screening of abstracts and full articles were resolved through review by the other researchers.

### **Data Charting Process**

A data-charting form jointly developed by the researchers was used to extract data. Two researchers jointly extracted and summarized the data from the eligible studies. The extracted data was reviewed and verified by all the other researchers.

### **Data Items**

We abstracted data on article characteristics (Authors, Objective, Scope, Publication year and Country of Origin); the Structure of the DTCs (Leadership, Composition, and Sub-committees); and the Roles of the DTCs.

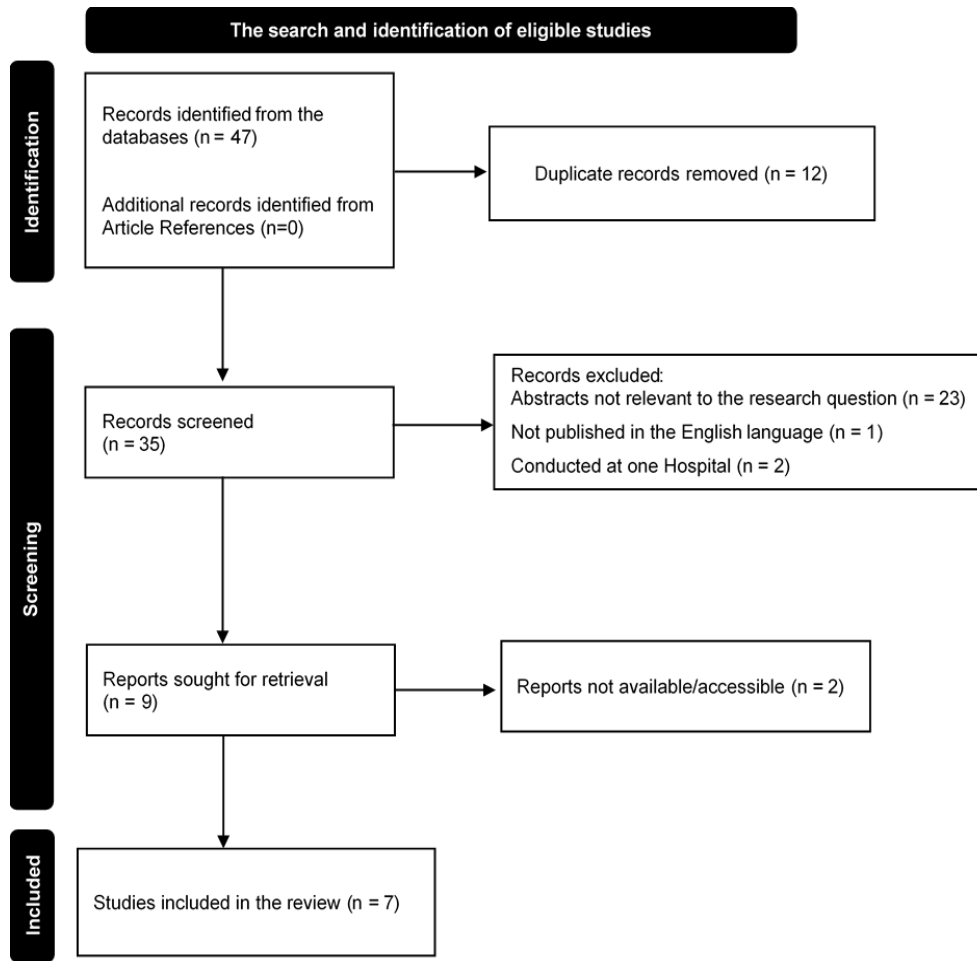
### **Synthesis of Results**

The data was summarized and grouped into the main areas relevant to the study objective (DTC structure and DTC roles) and analyzed to answer the research questions. The findings were then summarized and presented in tables.

## **Results**

### **Screening Results**

Through the database search, we identified a total of 47 potential records. Following the removal of the 12 duplicates, 35 records became eligible for abstract screening. We screened the abstracts and further excluded 23 records that were not relevant to the research question, one record that was not published in the English language, and two records where studies had been conducted at only one hospital. We sought to retrieve full texts for the remaining nine articles but accessed only seven, which were included in the review. The details of the screening process are shown in Figure 1 below.



**Figure 1.** PRISMA Flow Diagram for the Article Screening Process

### Characteristics of the Selected Studies

The characteristics of the selected studies are summarized in Table 1 below. Two of the studies (29%) were done in high income countries and five of the studies (71%) were done in low-and middle income countries,

according to the World Bank country classification by income [23]. All the studies were conducted at more than five hospitals. Four of the studies were carried out in Africa, one in the middle east, and two in Europe. Most of the studies had been published within the previous six years.

**Table 1.** Characteristics of the Selected Studies

| Author             | Objective   | Scope                               | Publication Year | Country of Origin |
|--------------------|---|-------------------------------------|------------------|-------------------|
| Alefan et al. [24] | To describe structures, functions, and activities of DTCs in Jordanian hospital   | 98 Mixed Hospitals                  | 2019             | Jordan            |
| Plet et al. [25]   | To describe the organization of DTCs in Denmark, how Hospital Drug Formularies are developed and implemented, and to what extent policies that support the use of HDFs exist. | 5 Hospital DTCs and 4 Regional DTCs | 2013             | Denmark           |

|                                     |   |   |      |              |
|-------------------------------------|---|---|------|--------------|
| Fadare et al. [5]                   | To determine the availability and functionality of DTCs among tertiary healthcare facilities across Nigeria               | 12 Public Tertiary Health Care facilities | 2018 | Nigeria      |
| Puigventó's et al. [26]             | To define the structure and working procedures of the Pharmacy and Therapeutic Committees in Spanish hospitals            | 200 Hospitals with over 75 beds           | 2010 | Spain        |
| Mashaba et al. [10]                 | To investigate the implementation and monitoring of decisions by PTCs among public sector hospitals with functioning PTCs | 86 Hospitals                              | 2018 | South Africa |
| Matlala et al. [13]                 | To describe PTC structures, activities, and the medicine selection process, among public sector hospitals                 | 20 Mixed Hospitals                        | 2017 | South Africa |
| Kabba et al. [27]                   | To evaluate the current structure, functions, activities, opportunities, and challenges in the overall setup of DTCs      | 7 Hospitals                               | 2021 | Sierra Leone |
| Notes: HDF- Hospital Drug Formulary |   |   |      |              |

### Structure of the Drug and Therapeutics Committees

The DTC membership was heterogeneous in composition for all the studies, and comprised of medical, administrative, and managerial staff. The size of the DTC in terms of membership was only reported in three studies [10, 24, 26], where the maximum number was 25 members and the minimum number was 8 members, except for the study by Alefan et al [24], where some DTCs had as low as two members. A clinician was the chairperson and a pharmacist the secretary, in the majority of the DTCs. A pharmacist was present in almost all the DTCs.

With the exception of studies by Puigventó's et al [26] and Mashaba et al [10] which did not report about the DTC sub-committees, and the study by Alefan et al [24] where more than half of the DTCs did not have sub-committees, there was at least one subcommittee reported in most of the DTCs in the other studies. The antimicrobial stewardship sub-committee was the most common. The details of the structure of DTCs from all studies are summarized in table 2 below.

**Table 2.** Structure of the Drug and Therapeutics Committees

| <b>Study</b>                           | <b>DTC Leadership</b>  | <b>DTC Composition</b>  | <b>DTC Sub-committees</b>  |
|--|--|---|--|
| Alefan et al. (2019), Jordan [24]      | Majority were physician led (75%), with Pharmacist as Secretary (75%).   | Committee membership varied from 2-17, with a median of 8.  | Majority (62%) did not have sub-committees.  |
|  |  | Pharmacists occupied Secretary and Chairman roles in 75% & 25% of DTCs, respectively.   | Number of sub-committees varied from 1 to 5, with majority having 1.   |
|  |  | All DTCs had a pharmacist in their structure.<br>The structure and number of members varied according to size of and the medical specialties in the hospital.   | Antimicrobial stewardship, and Medication Safety were the most common sub-committees.                            |
| Piet et al., (2013), Denmark [25]      | The DTC Chairman was either a Specialist Physician (67%) or the manager of the Hospital Pharmacies (33%)             | Most of the members were specialist physicians (48%), but pharmacists   | Most of the DTCs (78%) were organized into sub-committees.   |
|  |  | (12%), general practitioners (8%), managers of hospital pharmacies (7%), nurses (7%), clinical pharmacologists (6%) and others (11%) were also represented.   |  |
| Fadare et al., (2018), Nigeria [5]     | Chairpersons and secretaries of the DTCs were predominantly physicians (83.3%) and pharmacists (100%), respectively. | Membership of the operational DTCs included physicians, pharmacists, nurses, laboratory technologists, and administrative staff   | Majority (75%) had an Infection Prevention Sub-committee, and 25% had an Antimicrobial Stewardship Sub-committee |
| Puigventó's et al., (2010), Spain [26] | The majority of the DTCs were chaired by a pharmacist (42.5%), and a pharmacist was the secretary in 87.5% of them   | The mean DTC membership was 11.84, with a range of 8.20 – 14.08. Pharmacists were present in most of the DTCs, and the DTC membership was diverse with representation from clinical, surgical, nursing, hospital management, hospital administration and quality control functions. | Not reported   |
| Mashaba et al., (2018),                | A Pharmacist was the secretary in 51.2% of the DTCs, and the chairperson   | The composition of the DTC included medical practitioners (97.6%), pharmacists (100%), nurses (97.6%) and administrative officers 25.6%. The size of the DTCs ranged  | Not reported   |

|   |   |   |   |
|---|---|---|---|
| South Africa [10]                         | among 19.8% of the DTCs.  | between 11 and 15 members in 30.2% of cases, 16–20 in 20.9%, and 21–25 members in 20.9% of cases  |   |
| Matlala et al., (2017), South Africa [13] | The pharmacist was the secretary in 55% of the DTCs   | <p>Most professionals were represented in the PTCs, with variations across hospitals.</p> <p>Membership of PTCs included a pharmacist, who in most cases was the secretary. Membership included clinical specialists (85%), clinical directors, nurses, and administrative staff.</p> | <p>The available sub-committees among the DTCs were formulary subcommittee (20%); ADR sub-committee (25%), antimicrobial sub-committee (35%), and infection control sub-committee (90%). There were other sub-committees among 45% of the DTCs, which included a blood and blood products sub-committee and a quality assurance sub-committee. The antimicrobial stewardship sub-committee was the most active subcommittee among DTCs (35%).</p> |
| Kabba et al., (2021), Sierra Leone [27]   | A Medical Doctor was the chairperson in all the DTCs, while a pharmacist was the secretary in all the DTCs. | <p>DTCs were heterogeneous in membership and identical across most of the hospitals. Dominated by medical staff, including doctors, pharmacists, nurses, laboratory technicians, and Community Health Officers. However, administrative personnel are also part of the DTCs.</p>      | <p>The Antimicrobial stewardship sub-committee and ADR sub-committee were reported in all hospitals.</p>  |

## Roles of the Drug and Therapeutics Committees

The detailed roles performed by the DTCs according to the selected studies are summarized in table 3 below. The commonest DTC roles were hospital formulary management, developing policies and guidelines to guide medicines use, conducting medicines use evaluations and reviews, antimicrobial

stewardship, pharmacovigilance, the development of standard treatment guidelines, and education of hospital staff on matters of medicines use. In some of the studies, we found that DTCs in some countries had additional special roles like preparing and monitoring a budget for medicines [10], supporting research activities [13], regulating the activities of pharmaceutical company representatives [13], and medicines procurement [27].

**Table 3.** Roles of the Drug and Therapeutics Committees

| Study author, year, and country           | DTC Roles   |
|---|---|
| Alefan et al. (2019), Jordan [24]         | The main DTC responsibilities were general prescribing policies, drug selection, and formulary management.  |
| Plet et al., (2013), Denmark [25]         | Developing policy and guidelines for medication use; Developing hospital drug formulary; Developing treatment guidelines; Implementing and managing the hospital drug formulary; Surveillance of adverse effects; Surveillance of medication errors.  |
| Fadare et al., (2018), Nigeria [5]        | Development and periodic review of hospital drug formularies; surveillance of antimicrobial use; pharmacovigilance activities; monitoring the use of narcotics; and development of standard treatment guidelines (STGs) and infection control guidelines  |
| Puigventó's et al., (2010), Spain [26]    | Drug evaluation and selection.  |
| Mashaba et al., (2018), South Africa [10] | Conducting medicine use evaluations and medicine use reviews; Management of adverse drug reactions, product complaints, and medication errors; Implementing Standard treatment guidelines; Antibiotic stewardship; Preparing and monitoring a budget for medicines; and developing and maintaining medicines formularies.   |
| Matlala et al., (2017), South Africa [13] | Dissemination of decisions of the committee to all staff members; Formulation of policies and guidelines about the use of medicines within the Hospital; Developing formularies; Monitoring of expenditure on medicines; Drafting and coordinating implementation of treatment guidelines; Ensure a proper down referral system; Carry out medicine utilization evaluation; Develop and enforce standard guidelines for pharmaceutical company representatives; Supporting research activities by reviewing protocols and evaluating data relating to new medicines used in the hospitals; Initiation of educational programs in matters relating to drug therapy; Collecting and processing reports of adverse drug reactions. |



|   |   |
|---|---|
| Kabba et al., (2021), Sierra Leone [27] | Promote rational medicines usage in the hospital; Monitor, document, and report adverse drug reactions/events; Provide drug information to hospital staff; Antimicrobial stewardship; Prevention of drug shortages; and Drug procurement. |
|---|---|

## Discussion

This study summarized the recent data on the structure and roles of hospital Drug and Therapeutics Committees across various countries. We found that the structure and roles of the DTCs were generally similar across high-income and low-and-middle-income countries and that in some countries the DTCs have taken on extra uncustomary roles perhaps to plug the additional gaps in medicines management and use. There is however still a dearth of recent primary data on the structure and roles of DTCs in many countries. Data on the DTC sub-committees among the reviewed studies was particularly either deficient or not reported at all. Our findings are somewhat consistent with the review by Santos-Ramos et al [15].

The composition of the DTCs was generally similar across all the studies and was characterized by a mixture of medical professionals from various fields, administrative staff, and managerial staff. This kind of DTC membership was responsive to the general recommendation that DTCs should be multi-disciplinary to allow for all-round input from the diverse segments of the hospital, on matters of medicines management and use [3, 16, 28]. There is generally no standard recommended number for DTC membership although some country guidelines recommend 12 to 15 members, but the number can be adjusted depending on the size of the hospital to balance between adequate representation and keeping the number manageable [28]. The DTCs in the studies we included in the review generally had a range of 8 to 25 members, although some DTCs had as few as two members and were therefore not adequately multidisciplinary. The majority of the DTCs from the selected studies were chaired by clinicians, which is also the

recommended practice that a senior, respected clinician is well suited to chair the committee [28, 29]. It is also recommended that the Pharmacy department takes on the role of DTC secretariat, perhaps due to their expertise in medicines management issues [28, 29]. Indeed, we found that most of the DTCs had the pharmacist as the secretary. Drug and Therapeutics committees, especially those in large hospitals, are expected to establish smaller sub-committees to address issues and report to the plenary to facilitate decision-making [13, 28, 30]. In particular, at least the antimicrobial stewardship, formulary, and pharmacovigilance sub-committees are expected to be present [28, 30]. Among the studies included in our review, the antimicrobial stewardship sub-committee was the commonest and most active, followed by sub-committees that addressed some elements of pharmacovigilance. There were, however, several other sub-committees established like the formulary, and infection control among others, perhaps to offset the plenary of workload. Sub-committees are also a good platform to onboard additional skills and to provide opportunities for additional members to participate in matters of medicines management and foster ownership.

The World Health Organization enumerated some key roles for DTCs that still stand to date [3], and formulary management remains a vital role for the DTC [13, 31, 32]. However, published studies also reveal that there has been some evolution in DTC roles to respond to contextual medicines management and use problems other than just the logistics issues [16, 33, 34]. We found that DTCs among the studies included in our review performed their customary roles of hospital formulary management, developing policies and guidelines to guide medicines use, conducting medicines

use evaluations and reviews, antimicrobial stewardship, pharmacovigilance, the development of standard treatment guidelines, and education of hospital staff on matters of medicines use. Some DTCs were seen to have taken on additional responsibilities like preparing and monitoring a budget for medicines, supporting research activities, regulating drug promotion activities conducted by pharmaceutical company representatives, and medicines procurement. This change of role scope is likely due to the evolving needs in medicines management and use. We believe that the relevance of DTCs has increased, and as envisioned by Vogenberg & Gomes [9], we are likely to see an increasing evolution in DTC roles in response to the evolving medicine supply chain problems and technologies.

Our study provides a comprehensive analysis of and synthesis of existing data on DTC structure and roles among both high-income and low-and-middle-income countries and therefore contributes to the existing body of knowledge on hospital DTCs status worldwide. The study was conducted using a standardized guide for conducting and reporting scoping reviews, the PRISMA. Additionally, we included only studies conducted at multiple hospitals, which enriched our review. We also used trusted databases and multiple reviewers to screen the articles and abstract data. The limitations of this review are the scarcity of publications, the inclusion and analysis of only published studies, and the exclusion of studies not published in the English language, all of which could limit the generalizability of the findings.

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## Conclusion

The structure of Drugs and Therapeutics Committees is generally similar across both high-income and low-and-middle income countries, with minor contextual variations. All DTCs are heterogeneous in composition and contain both medical and non-medical staff. Most DTCs have at least one pharmacist. The DTC leadership comprises of a chairperson who is usually a senior clinician, and a secretary who is usually a pharmacist. The majority of the DTCs have at least one sub-committee, with the most common and active sub-committee being the one for antimicrobial stewardship. Most of the DTCs still perform their customary roles, but the role scope is expanding in some countries, where DTCs are taking on additional roles like medicines procurement, probably due to the evolving problems and technologies in medicines management and use.

This review indicates that more primary research is still needed to understand the status of DTCs in various countries and to provide more insights into the existence and functionality of the DTC sub-committees.

## Conflict of Interest

The authors declare that they have no conflict of interest.

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