Introduction

Multidisciplinary teams (MDTs) are an increasingly recognized component in the management of diseases that present complex treatment algorithms.\(^1\)\(^2\) Despite some physicians’ reluctance to use a multidisciplinary approach, advocating its possible impact on the patient-physician relationship, the role of MDTs in the improvement of clinical care and outcomes is well established.\(^1\) Better coordination of services, treatment planning and continuity of care are obtained via use of MDTs.\(^3\)\(^4\) At the organizational level, studies showed that these teams enable coordination of cost containment activities as well.\(^3\)\(^4\)\(^5\)

In the treatment of major burn victims, MDTs are considered as best practice.\(^6\)\(^7\) Since the mid-20\(^{th}\) century, there have been numerous advances in burn care, resulting in decreased morbidity and mortality.\(^8\)\(^9\) Consequently, the management of burn patients became too complex to be delivered effectively by a single specialist. For this reason, a multidisciplinary approach, allowing an integration of the expertise and knowledge of multiple health care providers in the field, is now recommended for optimal care.\(^10\)

However, with the exception of specialized burn centers, most institutions do not provide appropriate support for the formation of MDTs. Furthermore, the majority of specialists who wish to create a team do not possess the managerial skills required for group development.\(^1\) A clear shortage of literature exists on the challenges that are likely to be faced during a team’s formation. Thus, the main objective of this paper is to fill this gap. In addition, we

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tried to examine our personal experience more closely in order to identify the key elements that facilitated the implementation of our program.

Methods

We performed a qualitative analysis to examine all correspondences related to our tendon transfer project, from 2006 to 2008. The setting was a plastic surgery department and rehabilitation center in a national reference center. As regards the choice of the theoretical framework and procedure, two senior authors reviewed the texts to determine which should be included in the study. The criteria was that the tendon transfer project had to constitute the main subject of the correspondence or be mentioned at least 10 times.

The thematic analysis was guided by complexity theory, a contemporary form of systems theory. It was used to guide the selection of attributes to be measured, cluster the attributes into themes and conceptualize the pattern of interrelationships within the context of MDT as a complex adaptive system. All correspondences were read independently by the two senior authors in order (blinded for review) to identify and code the themes. Theoretical saturation was reached.

Classification and qualitative analysis of the gathered data was performed using NVivo software (Version 8.0 QSR International, Melbourne, Australia). A research assistant repeated the process to ensure that a consensus was achieved through this data analysis. Lastly, the data was organized in chronologic order.

Results

A hundred and fifteen correspondences were evaluated (111 emails and 4 letters). After data analysis, three main themes emerged: knowledge acquisition, project organizational setup and project steps design (Fig. 1).

Theme 1: Knowledge acquisition

The first theme focused on a review of the latest advances available in the field of tendon transfer, including the different types of surgeries, their effectiveness, possible complications, patient selection criteria and adapted rehabilitation protocols.

It included 29 messages, representing 24 % of the exchange database. It was further subdivided into two groups: exchange of papers/articles and attendance of scientific meetings (Fig. 2).

Theme 2: Project organizational setup

Fifty-nine messages were identified, representing 50 % of all correspondences. They were further subdivided into three categories: (Fig. 3)

1. Communications made with the administrative committee (35 messages). The need for the establishment and financing of such a program were the main focus of these discussions. A budget needed to be set for in-service educational programs, adequate space, and for specialized staff and equip-
ment (specialized beds, patient-transfer programs, and adequate surgical equipment).

2. Communications made to identify, assemble and assess the capacity of interested members (15 messages). These included communications with rehabilitation physicians (23%), physiotherapists (25.4%) and occupational therapists (50.8%).

3. Communications made to schedule multidisciplinary team meetings (9 messages). Knowledge sharing, report findings and coordination between different members represented the main topics of these meetings.

**Theme 3: Project steps design**
The third theme included 31 messages, representing 26% of the total correspondences. It was further subdivided into four topics: (Fig. 4)

a. The establishment of a protocol design that included patient selection, treatment scheduling and outcome evaluation.

b. Discussions on the technical aspects of the surgery.

c. Discussions on the aspects of rehabilitation, including rehabilitation protocols.

d. Communications and visit to a mentor team; an established MDT in the field of tendon transfer.

**Classification of data in chronological order**
Classification of the data into chronological order (Table I) showed a predominance of theme 2 (73.3%) and a virtual absence of theme 3 in 2006 (Fig. 5).

The following year, correspondences related to theme 2 decreased by 29.8%. This occurred concurrently with an increase in the number of correspondences related to themes 1 and 3 (13.8 and 16% respectively). In the last year, theme 3 represented the near majority of correspondences along theme 2, with a net increase of 11.2%. The number of correspondences related to theme 1 remained relatively constant (23.2%).

**Table 1 - Distribution of correspondences per theme during the 2006-2008 period**

<table>
<thead>
<tr>
<th>Theme 1</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exchange of original papers/articles</td>
<td>5</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Attendance of scientific meetings</td>
<td>0</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>14</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Theme 2</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communications with the administrative committee</td>
<td>12</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td>Communications with the potential team members</td>
<td>7</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Multidisciplinary meetings scheduling</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>14</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Theme 3</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocol Design</td>
<td>3</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Technical Aspects of the surgery</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Aspects of rehabilitation</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Contact and visit to the mentor team</td>
<td>0</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
<td>12</td>
<td>16</td>
</tr>
</tbody>
</table>

**Fig. 5 - Distribution of correspondences per theme during the 2006-2008 period.**

A more detailed analysis of theme 3 over time, showed an increase in the correspondences related to the protocol design in 2007 (Fig. 6). This was concomitant to the communications and visit made to the mentor team. In 2008, a further development followed in 2 other subcategories: aspects of rehabilitation and technical aspects of the surgery.

**Fig. 6 - Distribution of theme 3 subcategories over the 2006-2008 period.**
Discussion

Discussion of the findings

According to our findings, the main obstacle for MDT formation was of an organizational nature (50% of the correspondences). The communications with the administrative committee represented the majority of these correspondences (59.3%). In fact, our team needed to show the efficacy of a MDT to an audience that had a different perspective on interdisciplinary cares for tendon transfer. In the literature, we were able to find studies related to the cost effectiveness of MDTs but not to this specific type of MDT. However, our interaction with the mentor team at the beginning of 2007 may have provided us the concrete model needed, given that afterwards we were able to better define our vision and present more relevant arguments. Similarly to the plastic surgery team of Cleveland during the implementation of their facial transplant program,12 we felt that our affiliation to a university hospital may have been another facilitator on the organizational level, especially during the recruitment of team members and exchanges with the administrative committee.

As for the design setup of the project, our team faced early difficulties in the elaboration of protocols and algorithms related to this type of surgery. This could notably explain the partial absence of theme 3 during 2006. The literature review that was conducted on this matter did not provide us the proper tools to advance. This is when, through networking, we tried to get in contact with an already established team in the field of tendon transfer surgery: the mentor team. We were able to attend their evaluation clinics and observe their approach to patient care as well as their logistic details regarding patient selection, treatment scheduling and outcome evaluation. The notable increase in themes 1 and 3 during 2007 and 2008 may be directly related to the impact that this team had on our network. Furthermore, this collaboration gave us a contact to refer to for unresolved matters. The mentor team was further consulted in 2008, most notably during our discussions on the aspects of the surgery and rehabilitation protocols.

Multidisciplinary teams as a complex adaptive system

Complexity theory has been used in various fields, including health care.13 It suggests that organizations like MDTs act as a complex adaptive system (CAS): a group of individuals who interact in a non-predictable way with its surrounding environment.14-18 The actions of a CAS’s members are interconnected and affect the overall system performance. When faced with adversity, the system displays emergent self-organized behaviors in order to be sustained.18

Our own dynamic system initially comprised surgeons, rehabilitation physicians, occupational therapists and physiotherapists who interacted in a non-linear way while faced with internal and external stressors (identified by our findings). In this context, we could consider the addition of the mentor team to our network as a key element that led to the emergence of new behaviors, thereby facilitating the establishment of our program, notably in matters related to the organizational and design setup of the project. A team leader’s dedication and perseverance could probably be another element not shown by our findings. Schraff19 and the division of plastic surgery at Brigham and Women’s20 shared this view during the establishment of their multidisciplinary aerodigestive and composite tissue allotransplantation program respectively.

Study limitations

The knowledge acquisition theme represented only 24% of our correspondences. This result does not reflect the majority of our learning. An acquisition process, not shown by the analysis results, also came from live team meetings and individual readings, as well as from attendances at international meetings. In addition, even though we synthesized the data to identify the strongest themes, a researcher bias is inevitable to some extent because of the past experiences of the authors. Finally, it is important to note that this study does not describe an algorithm on how to proceed, but rather a general overview of the challenges experienced by our team during the establishment of our project.

Conclusion and recommendations

Based on the findings of this study, and the literature cited, we suggest an early association with a mentor team. Barriers to success (organizational and design setup) are likely to be addressed in a more efficient way. Although this recommendation is aimed primarily at the issues we identified in our own setting and during the establishment of our tendon transfer program, we expect that it may be relevant to the development of MDTs in other countries as well as other fields, such as burn treatment.

In the treatment of burn patients, MDTs are recognized as best practice. The complexity of the condition requires coordinated care. A team’s formation is likely to provide health care providers, who are unlikely to have the experience in group development, with challenges during its organizational and design setup. In this context, we believe an early association with a mentor team to be beneficial.
RÉSUMÉ. Les équipes multidisiplinaires (EMD) représentent une composante des soins reconnue dans le traitement de conditions complexes telles que les brûlures. Cependant, la plupart des institutions ne fournissent pas de soutien adéquat pour la formation de ces équipes. En outre, la majorité des spécialistes ne possède pas les compétences de gestion nécessaires pour créer une équipe et éprouvent souvent des difficultés à trouver les outils appropriés. Notre objectif est de fournir aux professionnels de soins de santé, qui souhaitent former une équipe multidisciplinaire pour le traitement des brûlures, une aperçu sur les défis susceptibles d’être confronter et d’identifier les éléments clés qui faciliteront la mise en place d’un tel projet. Cette étude a eu lieu dans un département de chirurgie plastique et un centre de réadaptation affilié à un centre de référence national. Une analyse qualitative a été effectuée sur toutes les correspondances relatives à notre projet de tétraplégie, de 2006 à 2008. Pour guider notre analyse thématique, nous avons utilisé une forme de la théorie des systèmes connu comme la théorie de la complexité. L’analyse qualitative a été réalisée en utilisant le logiciel NVivo (version 8.0 QSR International, Melbourne, Australie). Enfin, les données ont été organisées en ordre chronologique. Trois thèmes principaux ont émergé à partir des résultats: l’acquisition de connaissances, la confiance et l’organisation du projet ainsi que la conception des étapes du projet. Ces thèmes représentaient respectivement 24 %, 50 % et 26 % de toutes les correspondances. Les correspondances en lien avec la conception du projet et l’acquisition des connaissances complexes telles que les brûlures. Cependant, la plupart des institutions ne fournissent pas de soutien adéquat pour la formation de ces équipes.

Mots-clés: équipe pluridisciplinaire, approche multidisciplinaire, équipe interdisciplinaire, traitement des brûlures, théorie de la complexité

BIBLIOGRAPHY


Conflict of interest. None of the authors has a patent or financial interest.

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