

## ORIGINAL ARTICLE

# Allogeneic BMT and patient eligibility based on psychosocial criteria: a survey of BMT professionals

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**BMT professionals were compared regarding their willingness to proceed with allogeneic BMT given select psychosocial issues. A questionnaire was sent to 660 physician members of ASBMT, 92 social work members of BMT Special Interest Group, Association of Oncology Social Work, and 626 nurse members of BMT Special Interest Group, Oncology Nursing Society; 597 responded with a response rate of 43.5%. Items included background information, followed by 17 case vignettes; each represented a different psychosocial issue to which respondents indicated whether or not they would recommend proceeding with allogeneic BMT. In every vignette, at least 10% of respondents indicated they would not proceed. In six vignettes, at least 64% indicated *do not proceed*: suicidal ideation (86.8%), uses addictive illicit drugs (81.7%), history of noncompliance (80.5%), no lay caregiver (69.3%), alcoholic (64.8%), and mild dementia/Alzheimer's (64.4%). In 10 vignettes, at least 73% indicated *proceed*. On four vignettes, professional subgroups differed in their recommendation on whether or not to proceed with allogeneic BMT. Qualitative data suggest that this decision is contingent on the perceived acuity, severity, and currency of the psychosocial issue, patient ability to comply with treatment given the issue, and its manageability as a risk factor for treatment related vulnerability and outcomes.**

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## Introduction

Virtually all BMT protocols have eligibility based on biomedical criteria, critical for informed decision-making if not realizing the curative potential of BMT.<sup>1</sup> That psychosocial factors have been reported either associated with or predictive of treatment-related vulnerability<sup>2–5</sup> and survival,<sup>6–15</sup> suggests that psychosocial issues may also be important as eligibility criteria for BMT. That notwithstanding, there are studies in the BMT literature<sup>16–18</sup> which are either inconclusive or do not support the prognostic value of psychosocial variables. Thus, while most transplant clinicians believe that psychosocial issues may be important determinants of patient eligibility, it is unclear what issues are important and if and how they affect the decision to proceed with allogeneic BMT. Lacking clarity, such issues are potentially divisive among members of the multidisciplinary team, especially when compliance and management problems arise with patients having psychosocial issues, placing them at risk clinically; this provides even more reason to critically and empirically consider eligibility based on psychosocial criteria. Yet, there is a dearth of literature on this issue, as well as on psychosocial eligibility criteria, in allogeneic bone marrow transplantation. Although morbid obesity,<sup>19</sup> borderline personality disorder,<sup>20</sup> noncompliance,<sup>21</sup> and prisoner status,<sup>22</sup> for example, have been discussed in the literature as possible constraints for BMT, psychosocial restrictions are typically vaguely defined and inadequately researched in BMT programs.<sup>23</sup> If allogeneic BMT is limited based on psychosocial criteria, what is acceptable, who decides, and what is the role of the multidisciplinary team in such decision-making?

Although inadequately investigated in BMT, psychosocial criteria have been researched in solid organ transplantation (SOT).<sup>24–29</sup> Exemplary is the research revealing which psychosocial criteria were absolute contraindications for heart transplant for more than 70% of programs in the United States; these criteria were schizophrenia with active psychotic symptoms, current suicidal ideation, history of multiple suicide attempts, dementia, severe mental retardation, current heavy drinking, and current use of addictive drugs.<sup>28</sup> Research also shows that heart transplant programs were more stringent than kidney and liver trans-

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plants programs in utilizing psychosocial criteria as part of patient eligibility decision-making.<sup>24–25</sup> This literature also reveals two opposing sides in arguing whether psychosocial factors should be considered in patient selection: one side states that psychosocial factors influence outcome, so they must be considered; the other side states that a patient who might benefit medically should not be ruled out based on psychosocial reasons.<sup>29</sup> That this debate and findings from the aforementioned studies may have some bearing on BMT patients seems apparent. However, a significant difference in setting limits between solid organ and BMT programs is that, in SOT, there are long waiting lists and a shortage of organs, whereas, in BMT, utilizing a donor's uniquely DNA matched bone marrow does not deprive another patient of this resource. Yet, allogeneic BMT is an intense, resource demanding treatment that is associated with significant psychosocial as well as biomedical risks, especially for patients receiving matched unrelated donor marrow. Decision-making about limiting this treatment based on psychosocial eligibility criteria warrants study.

In most BMT programs, an oncology social worker or other mental health professional meets with patients and a family member preadmission to complete a psychosocial assessment and identify patients with psychosocial issues placing them at risk clinically, but it is unknown how this information is utilized in determining patient eligibility to proceed with allogeneic BMT. If these transplants were to be limited based on psychosocial as well as biomedical criteria, what criteria would be acceptable? Who decides and what is the role of the interdisciplinary team in such decision-making? Original research reported herein attempts to address these questions. The authors hope to formalize a discussion and begin to develop a consensus about the relevance of psychosocial issues in determining patient eligibility for allogeneic BMT. As such, compared are survey responses of BMT physicians, nurses, and social workers regarding their willingness to proceed with allogeneic BMT, given select psychosocial issues.

## Materials and methods

This exploratory research utilized a self-administered questionnaire, items of which were derived from a review of the relevant research literature on psychosocial screening of solid organ transplantation candidates, with reference to the BMT literature. Seventeen case vignettes were constructed, each asking whether or not it was appropriate to proceed with an allogeneic BMT (assuming an appropriate donor was available), given a specific psychosocial issue.

After obtaining IRB approval at a major tertiary hospital in the mid-west and approval of each of the following professional organizations, survey questionnaires were sent to 1378 people from three professional groups: 660 North American physician members of ASBMT, 92 social work members of the BMT Special Interest Group of AOSW (Association of Oncology Social Work), and 626 nurse members of the BMT Special Interest Group of ONS (Oncology Nursing Society). Five hundred and ninety seven (43.5%) responded.

## Questionnaire items

Respondent background variables include age, gender, years of practice experience in BMT, professional affiliation (i.e., nurse, physician, or social worker), and three questions about participation in decision-making regarding patient eligibility for allogeneic BMT: (1) Have you ever recommended not proceeding with an allogeneic bone marrow transplant based on a psychosocial problem? (2) Have you ever cared for an allogeneic bone marrow transplant patient who, you believe, should not have been transplanted due to psychosocial reasons? (3) In your transplant center, does the attending oncologist solely, make the decision whether a patient proceeds with allogeneic bone marrow transplant, or is it an interdisciplinary team decision? Respondents were then asked to indicate whether they would or would not recommend proceeding with an allogeneic BMT with respect to seventeen case vignettes, each representing a different psychosocial issue (Table 1); in each case, bone marrow transplantation is the only curative option, the patient has leukemia, has a matched donor, and wants to proceed. Respondents had the option of providing a follow-up comment to their decision.

## Statistical analysis

Categorical variables were summarized as percentages; continuous variables were summarized as the mean and s.d. Categorical background variables were compared among professions using the  $\chi^2$  test; continuous background variables were compared using analysis of variance. When the overall *P*-value was significant ( $P < 0.05$ ), pairwise comparisons were performed to identify specific differences. As all of the background variables differed among the professional groups, logistic regression analysis was used to compare responses to the 17 case vignettes among the three professional groups, adjusting for the six respondent background variables found to be different among the three groups. All analyses were performed using SAS<sup>®</sup> software. All statistical tests were two-sided;  $P < 0.05$  was used to indicate statistical significance.

## Results

### Respondent background variables (Table 2)

Responses to the survey and all six noncase variables revealed significant ( $P < 0.05$ ) differences among the professions. A higher percentage of social workers responded to the survey than nurses or physicians. Physicians and social workers were older than nurses. The percentage of females was higher among nurses and social workers than among physicians. Years of practice experience in BMT differed among all three groups, with physicians having the most experience (mean = 14 years) followed by nurses (mean = 10 years), then social workers (mean = 7 years). Relative to nurses, a higher percentage of physicians had ever recommended not proceeding with an allogeneic BMT based on a psychosocial issue. Relative to physicians and social workers, a higher percentage of nurses had ever cared for an allogeneic BMT patient who should not have been

**Table 1** Select psychosocial issues in allogeneic BMT: case vignettes

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Case #1: The patient has a history of two suicide attempts since his cancer diagnosis, but is not actively suicidal at this time  
 Case #2: The patient is mildly mentally retarded, lives at home with parents and, cognitively, is not able to fully understand the risks and benefits and physical experience of an allogeneic bone marrow transplant. His parents want him to proceed  
 Case #3: The patient is diagnosed with schizophrenia with psychotic symptoms, but it is being controlled with active outpatient treatment  
 Case #4: The patient reports daily use of marijuana and reports no other substance use or abuse  
 Case #5: The patient lives 6 h away from the hospital, and he has no caregiver to stay with him near the hospital after discharge from the inpatient BMT Unit. This patient has no spouse, no siblings, and his parents are deceased. The social worker has talked extensively with the patient and tried unsuccessfully to help him identify a caregiver within his social network  
 Case #6: The patient has the mental health diagnosis of borderline personality disorder  
 CASE #7: The patient drinks several alcoholic drinks daily, states he has been told he is an alcoholic, and states he has never quit drinking before or had treatment for substance abuse  
 Case #8: The patient was recently released from prison after serving a 10 year sentence for a felony crime involving physical assault/violence  
 Case #9: The patient is receiving treatment for major depression  
 Case #10: The patient has a history of being noncompliant with treatment, specifically he fails to keep appointments at times and has stopped taking medications on his own in the past  
 Case #11: The patient has significant financial problem; he has no health insurance, is not eligible for government assistance (Medicaid, Medicare), and does not have the means to pay for transplant privately  
 Case #12: The patient's family member who is designated to be the caregiver postdischarge is actively being treated for mental health problems  
 Case #13: The patient reports current suicidal ideation  
 Case #14: The patient reports current use of addictive illicit drugs  
 Case #15: The patient has mild dementia from early onset of Alzheimer's disease  
 Case #16: The patient is morbidly obese  
 Case #17: The patient currently smokes tobacco

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**Table 2** Background information by profession

Variable	Nurse	Physician	Social work	Overall P-value
<i>Those who responded to the survey</i>				
Yes	44.4% <sup>s</sup>	39.8% <sup>s</sup>	68.5% <sup>n,p</sup>	<0.001*
<i>Age (years)</i>				
Mean ± s.d.	42 ± 9 <sup>p,s</sup>	47 ± 7 <sup>n</sup>	45 ± 11 <sup>n</sup>	<0.001*
<i>Gender</i>				
Female	96.7% <sup>p</sup>	23.8% <sup>n,s</sup>	93.7% <sup>p</sup>	<0.001*
<i>Years of practice experience in BMT</i>				
Mean ± s.d.	10 ± 6 <sup>p,s</sup>	14 ± 7 <sup>n,s</sup>	7 ± 5 <sup>n,p</sup>	<0.001*
<i>Have you ever recommended not proceeding with allogeneic BMT based on a psychosocial problem?</i>				
Yes	56.2 <sup>p</sup>	75.4 <sup>n</sup>	65.1	<0.001*
<i>Have you ever cared for allogeneic BMT patient who you believe should not have been transplanted due to psychosocial reasons?</i>				
Yes	82.1 <sup>p,s</sup>	73.0 <sup>n</sup>	69.4 <sup>n</sup>	0.012*
<i>In your transplant center, does the attending oncologist, solely, make the decision whether a patient proceeds with allogeneic BMT, or is it an interdisciplinary team decision?</i>				
Team	70.1 <sup>p</sup>	84.3 <sup>n,s</sup>	63.2 <sup>p</sup>	<0.001*

\*Significantly different among the three professions ( $P < 0.05$ ).  
 Significantly different from <sup>s</sup>social workers, <sup>p</sup>physicians, <sup>n</sup>nurses ( $P < 0.05$ ).

transplanted due to psychosocial reasons. The percentage who indicated that an interdisciplinary team making the decision to transplant was higher among physicians than either nurses or social workers.

*Responses to the seventeen case vignettes (Table 3)*

Case vignettes are summarized by the 'do not proceed' response. The vignettes are ordered from highest to lowest percentage of those who respond 'do not proceed'. In virtually every case vignette, at least 10% of the respondents indicated they would not proceed with allogeneic

BMT based on the social or psychological issue raised in the vignette. As shown in Table 3, in the top six case vignettes, a majority of respondents stated they *would not* proceed with BMT, whereas, in the bottom 10 case vignettes, a majority of respondents stated they *would* proceed with BMT. Between the top six and bottom 10 cases is one case vignette (#11, significant financial problems) on which respondents were about equally divided as to whether or not to proceed with BMT.

Also, in every case vignette, 25–47% of the respondents provided qualitative comments relative to the psychosocial issue raised in the vignette. Thematic to both the decision to

proceed and not to proceed with BMT were such qualifying comments as the obtaining of psychiatric and/or psychosocial evaluation and follow-up, as well as legal and ethical consultation in cases where competency and informed consent were an issue. Respondent comments typically revealed concerns about the currency, acuity, and severity of the psychosocial issue and its manageability as a risk factor for treatment related vulnerability and outcomes in BMT.

#### Comparing responses to case vignettes by profession (Table 4)

Significant differences ( $P < 0.05$ ), are indicated in four of the 17 case vignettes. Specifically, on three of these four cases (Case #1, two suicide attempts; Case #9, treated for major depression; Case #15, mild dementia from early

**Table 3** Summary of case vignettes by 'do not proceed' response

Case vignettes <sup>a</sup>	Number of responses	Do not proceed	
		No.	%
Case #13 Suicidal ideation	567	492	86.8
Case #14 Uses addictive illicit drugs	562	459	81.7
Case #10 History of noncompliance	570	459	80.5
Case # 5 Lives far away, no lay caregiver	561	389	69.3
Case # 7 Alcoholic	551	357	64.8
Case #15 Mild dementia/Alzheimer's	531	342	64.4
Case #11 Significant financial problems	547	261	47.7
Case #16 Morbidly obese	550	148	26.9
Case #12 Caregiver has mental problems	538	127	23.6
Case # 4 Daily use of marijuana	581	106	18.2
Case # 2 Cognitively impaired	569	100	17.6
Case # 6 Borderline personality disorder	540	92	17.0
Case # 3 Controlled schizophrenia	565	92	16.3
Case # 1 Two suicide attempts	575	91	15.8
Case # 9 Treated for major depression	565	89	15.8
Case #17 Current tobacco smoker	576	89	15.5
Case # 8 Convicted of a felony	548	68	12.4

<sup>a</sup>Case vignettes are ordered from highest to lowest percentage of those who respond 'do not proceed'.

**Table 4** Comparing response to case vignettes by professional groups

Case vignette	Nurse %	Physician %	Social worker %	Overall P-value
Case #15 (mild dementia/Alzheimer's)				
Do not proceed	68.0 <sup>p,s</sup>	63.5 <sup>n</sup>	51.9 <sup>n</sup>	0.021*
Case #11 (significant financial problems)				
Do not proceed	39.8 <sup>p</sup>	54.5 <sup>n</sup>	53.7	0.012*
Case #1 (two suicide attempts)				
Do not proceed	20.5 <sup>p</sup>	11.4 <sup>n</sup>	14.0	0.043*
Case #9 (treated for major depression)				
Do not proceed	22.3 <sup>p,s</sup>	11.6 <sup>n</sup>	5.0 <sup>n</sup>	<0.001*

\*Significantly different among the three professions ( $P < 0.05$ ).  
Significantly different from <sup>s</sup>social workers, <sup>p</sup>physicians, <sup>n</sup>nurses ( $P < 0.05$ ).

onset of Alzheimer's) a higher percentage of nurses relative to physicians and social workers recommended not proceeding with the transplant. However, on Case #11, significant financial problems, a lower percentage of nurses relative to physicians and social workers recommended not to proceed to transplant.

## Discussion

Study findings suggest that, among the professions, there are indeed psychosocial cut-points in deciding who should and should not proceed to allogeneic BMT. Although most responding professionals saw this as a team decision, the qualitative data reveal that for many, the decision was based on the condition of having psychiatric evaluation and/or psychosocial assessment with follow-up such as medications, counseling, and/or family support. Also, for many, this conditional decision was informed by perceived acuity, severity, and currency of the social or psychological issue, with respondents more likely to recommend proceeding in case situations when such issues were perceived as manageable and not directly related to patient ability to be compliant with treatment protocols.

Although the decision, given by both those who did and did not recommend proceeding with BMT was a conditional one, the decision not to proceed as the initial response may be associated with viewing the psychosocial issue as more of a constraint, whereas, the decision to proceed as the initial response may be associated with viewing the same issue as one amenable to being managed. Such reasoning appears consistent with researchers in SOT who state: 'When transplant coordinators perceived that patients' psychosocial and lifestyle problems were under control or corrected, they were more likely to consider them for a transplant.'<sup>25</sup> By logical extension, that nurses in the present study were more likely than physicians and social workers to recommend not proceeding to transplant, for those patients having select psychological issues (i.e., prior suicide attempts, major depression, and mild dementia/Alzheimer's), may have been due to their perception that patients with such issues are more difficult and burdensome to manage at the bedside. Apparently, the decision to proceed with BMT for these patients was considered less warranted by nurses and, as such, portrays them as being more reluctant than physicians and social workers to proceed, given these issues. This may be explained, in part, by the finding that nurses, more than physicians and social workers, indicated they had cared for an allogeneic BMT patient who should not have been transplanted due to psychosocial risk factors. On the other hand, that nurses, more than physicians and social workers, were willing to proceed with BMT for those patients having significant financial problems suggest that on this social issue, in contrast to the complex psychological issues, they may be more egalitarian and physicians and social workers more utilitarian in their reasoning regarding whether or not to proceed with BMT. This is consistent with findings in an earlier comparative study of clinical health professionals that revealed social workers and physicians as more likely than nurses to consider such factors as cost-benefit ratios

and scarcity of resources in their rationing decisions in end of life care.<sup>30</sup>

As conceptualized herein, the decision whether or not to proceed with BMT is a conditional one, influenced by perceived acuity, severity, and currency of the psychosocial issue, its manageability as a risk factor, and the patient's ability to be compliant. Therefore, the top six case vignettes on which a majority would not proceed with BMT may have been perceived as having social and/or psychological issues either more difficult to manage and/or were perceived as being more directly related to the patient's ability to be compliant. On the other hand, the remaining 11 case vignettes may have been perceived as dealing more with specific social and/or psychological issues that were manageable and not directly related to patient ability to be compliant. Cases where there were significant differences, the frontline experiences of nurses may have made them more reluctant to recommend proceeding to BMT because of patient manageability and compliance concerns.

That psychosocial and biomedical eligibility criteria in BMT are similarly justified should be underscored. Both have the goal of minimizing risks and maximizing good outcomes. As poignantly stated elsewhere by a BMT nurse, 'no center wants to risk more patients dying because they were less than diligent in screening applicants.'<sup>19</sup> Less profound than talk of treatment related vulnerabilities and survival outcomes, but nevertheless important is that neither do BMT programs want patients and families angry or upset, questioning the appropriateness of a decision not to proceed based on a psychosocial issue. Results from this empirical research may support clinicians making tough decisions by providing validation that the majority of BMT programs have at some point in time decided not to proceed with allogeneic BMT based on a psychosocial issue. The research also provides evidence that their colleagues, as a majority, recommend not proceeding in cases where a psychosocial issue is likely to negatively impact patient ability to comply with treatment demands. Interestingly, in the present study, this did not include several case vignettes with lifestyle problems often associated with stigma in that a large majority decided to proceed with BMT for persons who were convicted felons, morbidly obese, current tobacco smoker, or daily user of marijuana. One may perceive the small percentage of clinicians who recommended not proceeding with BMT, given these issues, as less than liberal. Relevant, however, is the comment of one physician respondent:

These are not black and white issues .... in general we try to make transplant available if there is a reasonable chance that a patient will have adequate support.

Given such a stance in BMT, greater attention may need to be given to managing psychosocial issues as risk factors. Perhaps this is reality and as it should be, inasmuch as cancer and its treatment can be viewed as a psychosocial transition, with positive as well as negative psychosocial sequelae.<sup>31,32</sup> That notwithstanding, pivotal questions are being raised: should BMT programs look to preclude patients with psychosocial issues that place them at high

risk clinically? If not, should priority be given to educating staff on the management of psychosocial risk factors and/or to better preparing patients and families with psychosocial issues that place them at risk clinically in BMT? Patients with psychosocial issues may pose unacceptable trade-offs, not only in terms of their own risks and benefits post transplant, but additionally, may place front line staff at risk of burnout, especially BMT nurses. Could BMT social workers be more proactive in assisting the team, especially nurses, by, for example, facilitating psychosocial rounds to provide education and support? Another program level question is to what extent is it reasonable in BMT to work towards the solid organ transplantation (SOT) model? Or, would establishing consistent psychosocial eligibility criteria and psychosocial treatment plans for prospective patients who do not meet that criteria be helpful in BMT? On a more macro level, is there a need for international level guidelines with respect to psychosocial eligibility criteria in BMT? Inasmuch as clinicians in non-US cardiac transplant programs are, for example, less likely to view smoking, criminality, and lack of social support and financial resources as psychosocial constraints,<sup>28</sup> cultural differences are also likely to shape opinions about such psychosocial eligibility criteria in BMT. Thus, potential differences in clinician attitudes by country would need to be considered if an attempt was made to construct international guidelines in BMT. Furthermore, if patients are denied access to BMT according to standard psychosocial as well as biomedical eligibility criteria, clinicians must be prepared to discuss alternative options.

After reviewing responses to 17 hypothetical case vignettes, each involving a psychosocial issue potentially problematic for proceeding with allogeneic BMT, we conclude that such issues do influence eligibility decisions in allogeneic BMT. In particular, when such issues are viewed as negatively impacting upon patient compliance with treatment protocols, they call forth a decision not to proceed, whereas, specific social and psychological issues that are perceived as being manageable call forth a decision to proceed with BMT. Whereas responding clinicians were deliberate and discriminate in their willingness to proceed with allogeneic BMT, given selected psychosocial issues, how this plays out in actual practice remains unanswered. Repeating this survey research in other countries would also be of interest. We hope that our research findings begin to formalize a dialogue leading to a consensus about the relevance of psychosocial issues in determining patient eligibility for allogeneic BMT. At the very least, it provides a beginning point for further research and discussion on this matter.

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