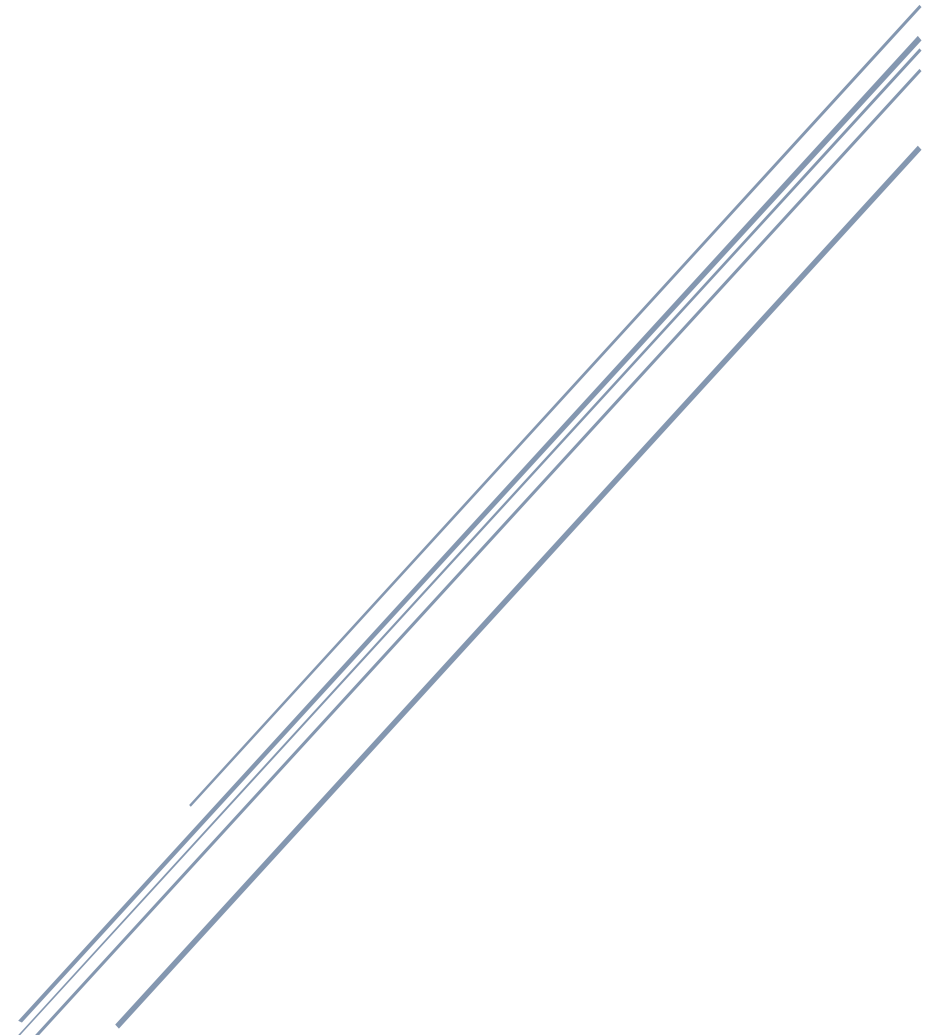
INTEGRATING CLINICAL GUIDELINES INTO MULTIDISCIPLINARY MEETINGS



Willemijn Stoel, s1201492

Examencommissie:
Sabine Siesling
Jeanette van Manen
Xander Verbeek

University of Twente
Bachelor assignment, 2015

Introduction

Cancer is one of the most common illnesses in Australia. In 2014 it was estimated that 123,290 new cases of cancer would be diagnosed [1]. This number is almost three times as high as in 1982, and will probably only increase in the coming years. This increase can be partly explained by the ageing and increasing size of the population. Another reason is the introduction and implementation of screening programs and more advanced technology and techniques used to detect cancer. Currently the chance of getting diagnosed with cancer before the age of 75 is 1 in 3 for males and 1 in 4 for females [1].

To make clinical decisions on diagnoses and the treatment plan on a multidisciplinary basis, cancer patients are discussed in 'multidisciplinary meetings' (MDMs). Multi-disciplinary care is mostly referred to as "an integrated team approach to health care in which medical and allied healthcare professionals consider all relevant treatment options and develop collaboratively an individual treatment plan for each patient" [2]. During MDMs these individual treatment plans are discussed using the diagnostic results. Participants of MDMs typically include medical oncologists, radiologists, pathologists, nurses and allied health care professionals (HCPs) such as occupational therapists, dieticians and physiotherapists [3].

MDMs have proven to lead to better adherence of clinical guidelines [4]. Education also improves because of knowledge shared during the meetings [4]. Overall patients are mostly satisfied with the process of MDMs and clinicians find that meetings are effective mechanisms to coordinate and improve care for patients [4]. An efficient meeting would mean all HCPs of different disciplines and allied staff are present during the meeting. Also clinical experts on rare tumors should be present when needed. The needed information as patient data and characteristics are available during the meeting. If necessary extra information such as clinical guidelines are made accessible for during the meeting. All patients submitted to the MDM are discussed within the set time frame. As a result of the discussions decisions about treatment plan or follow-up are made. While discussing the patients, patient data is considered and when needed the extra information can be accessed via the patient file to support the decision making.

With the number of cancer patients growing, the demand for MDMs can also be expected to rise. Questions about making MDMs more effective and efficient are arising.

Different studies show that MDMs are not always as effective and efficient as they could be. Time is not always efficiently spent during the meeting and decisions are sometimes made rapidly [3]. Too many patients were being discussed during a MDM without an adequate time plan. This results in 'time' being an important factor in an efficient MDM. Also a lack of information, either patient data or information on procedures, to support the decision making is considered a barrier to effective MDMs [4]. To improve the effectiveness of MDMs support in decision making should be readily available and accessible. The support in decision making can either be provided by a system or by a search that is performed manually. To make the provided information easier to use, access to all available patient information should be gained, regarding the patient's diagnoses and staging information, the medical history of the patient, general practitioners information, pathology, radiology and files from other hospitals or care facilities. By considering all relevant information, better informed decisions can be made which lead to better patient outcomes [5].

Mostly MDM decisions are based on patient characteristics and diagnostic results. When the use of this information is not enough, other evidence-based information could be of help.

Relevant information includes clinical guidelines, scientific databases with clinical evidence-based information and clinical expertise. Nowadays, there is little explicit use of these sources, especially the clinical guidelines and evidence-based information. There is still a gap between the uptake and utilization of evidence based information in clinical practice [5]. However, those sources have many possible benefits to the efficiency and effectiveness of MDMs. Another point to be considered is the question 'when' the consulting of these sources is most useful to be done. This could either be 'before a meeting', 'during a meeting', and 'after a meeting'. This paper tries to give an overview of what is known about the benefits of supporting the decision making in MDMs as well as when consulting information sources is most useful.

Methods

First, a search for background literature on MDMs was performed. Different sources, such as Pubmed and websites from the Australian government, have been consulted. Second, a more detailed search is performed about four information sources (past MDMs, clinical guidelines, Cochrane library and Adjuvant! Online), mostly using Pubmed. Terms as "decision support", "decision making", "clinical guidelines", "case-based reasoning", "multidisciplinary meeting", "education" and combinations of those terms delivered the sought results.

An analysis was performed following the literature search. The findings of this analysis are presented in the results section. An overview of the literature used and found per information source is provided. This is followed by an interpretation of the literature, which resulted in the different options provided in the results section.

Results

The literature study suggests access to four different information sources could contribute in the decision making process of MDMs:

- Past MDMs
- Clinical guidelines
- Cochrane library
- Nomograms via Adjuvant! Online (hereafter Adjuvant)

Past MDMs

Case Based Reasoning (CBR) is the concept of using previous experience, in the form of past cases, to solve new problems [6]. This happens through two main tasks, retrieval and adaption. Retrieval is the search for the most similar case to the current one. This search is started with entering patient features in a system, followed by a calculation to provide the most similar case [7]. When the closest matching case is found, the adaptation stage follows. This entails the modification of solutions of former cases to fit in a current one [6] and be completed by either the user himself or by a method integrated in the system. The cases used by CBR systems are either real cases or are based on real cases. Different studies using CBR show possibilities that could also count for the use of past MDMs. The current process to make a diagnosis or set up a treatment plan involves the decision making process of clinicians [6], as they use their clinical expertise to decide on best fitting treatments. When using CBR, the system does the same. The only difference is that where the human mind is limited by memory, the system can easily retrieve large amounts of cases from its database. This way CBR can improve decision making by integrating data with clinical knowledge [5]. The concept of CBR can be used to find a way to integrate past cases into the process of MDMs.

Records from past MDMs are useful as they contain information about decisions made in past cases with similar patients. Consulting these records may support in decision making by providing extra information. Unfortunately, most MDM databases have only recently emerged and data from MDM deliberations are rarely fully integrated into new information systems. Also, searching the database is difficult. An easy and working search system has not yet been designed. Despite these barriers, experiences in the past suggest consulting previous MDMs can be promising.

In the current situation around MDMs time is already a big issue. Therefore any extra part added to a MDM should take as little time as possible during the meeting or alternatively happen before or after the meeting. In the case of consulting past cases this means it should happen before the meeting. If a proper search system is designed for using past cases in MDMs, time could probably be saved, which would facilitate the MDM process. For example, when a patient is first submitted the search system can almost automatically retrieve similar past cases. After the retrieval there will be enough time left to interpret the outcome and apply it to the current case. Another benefit is that the information is already at hand when needed during the meeting, which could increase the likelihood of the information actually being used. Discussing past cases contributes to the knowledge of all staff present during the MDM. This way data is integrated with clinical knowledge resulting in improved decision making [5]. Consulting past MDMs after a MDM is not really relevant as it would only provide information about the compliance of the current decision with past decisions, and the influence on the decision made would be small. It is proven that having information ready when needed has a greater impact on the decision [5], as retrospective feedback is not as useful as feedback given concurrently [8]. Therefore the use of past MDMs after the meeting is not considered effective.

Analysis on clinical guidelines

According to the Australian National Health and Medical Research Council (NHRMC) guidelines are sets of non-mandatory rules, principles or recommendations in a specific field. The guidelines referred to in this paper are the NHMRC guidelines, which provide information for achieving best practice. Consulting these guidelines is possible via the Guideline Portal of the NHMRC, which has been developed to give clinicians and policy makers an easy access to all clinical practice guidelines.

Literature shows that high compliance with guidelines can improve patient outcomes [10-11]. However, in current clinical practice guidelines are still underused. However, clinicians have little awareness of the compliance on guidelines [8]. There are several variables that determine whether the clinicians adopt the guidelines or not. The characteristics of the health care provider are important, as well as the characteristics of the practice setting. The more efficient the process is where the guidelines have to be implemented the more the health care providers adopt them. Behavior, knowledge and skills of clinician influence the application of guidelines. A different way to improve the use of guidelines is to promote them locally and to deploy an ‘opinion leader’, who is a prominent colleague [8]. This person can stimulate the use of guidelines by showing the effects of usage by using the guidelines themselves. Also the more guidelines are in line with existing routines the better they are implemented and used because they do not require too much change in daily practice [12]. A precise description on actions and decisions was also found to have a positive influence on the adoption of guidelines [12]. When integrating guidelines into MDMs an ‘easy to use’ environent is created. The accessibility improves, especially when an efficient way to integrate them is

found. This responds to the characteristics of the surroundings. Clinicians' behavior is much more difficult to change but eventually they will get used to using the guidelines and alter their behavior themselves. To make sure the current routines are not changed much, a simple way should be found to integrate the guidelines in the process of the MDMs.

When talking about clinical guidelines and the integration into MDMs the same arguments apply as for past MDMs. Examining the clinical guidelines will take too much time during the meeting, as the guidelines are only consultable as long pieces of text. Therefore it will take too much time to read and analyze the guidelines during the meeting. However, this could increase the education level during the MDMs, as discussing which clinical guidelines are relevant for the case and how they should be applied will increase knowledge of all those present for the MDMs. Thus a more informed decision can be made. The time, however, remains a barrier, making 'before the meeting' a better option to consider. Information will already be at hand during the meeting if the consulting of clinical guidelines has already taken place before the meeting, leaving more time during the meeting for the actual decision making.

Analysis on Cochrane library

The Cochrane Library is a collection of six databases that contain different types of high quality, independent evidence to help inform healthcare decision-making, and a seventh database that provides information about Cochrane groups. When searching the Cochrane library relevant articles from scientific journals and Cochrane literature reviews can be found, with an abstract and plain summary provided. Some articles can be accessed freely while others require membership of the journals.

Clinicians do show willingness to perform a search for literature on their own. A problem that occurs is that they do not have enough experience with databases as well as the time it takes them to complete the search. A possible solution is to just let them perform the search, which will help them gain more experience in using Cochrane library and reach optimal use [13].

Searching through Cochrane library is inconvenient during the meeting. As with past MDMs and clinical guidelines time is a pressure point. When consulting Cochrane library during the meeting it requires more time per patient because the information is not ready to use. It still needs evaluation, which cost a lot of time. The educational factor is high because consulting information when needed proves to be the most effective [5]. Searching the Cochrane library and evaluating the results before the meeting is a good alternative. This way information is still transferred between the participants of the meeting without the time restrictions. Information is already at hand when needed and it is also optimizes consulting because there is sufficient time before the meeting to look up relevant articles. Another option would be to examine the Cochrane library after the MDM. However, the same feedback argument occurs as with clinical guidelines and past MDMs.

Analysis on Adjuvant! Online

In cancer care nomograms are used for providing prognostic information based on 'big data' collected in cancer registries. An example of a nomogram that is frequently used is Adjuvant, based on US SEER data. The purpose of Adjuvant is to help health professionals assessing the risks and benefits of giving additional therapy (adjuvant therapy: usually chemotherapy, hormone therapy, or both) after surgery. Since Adjuvant is a specific kind of nomogram the clinician decides if Adjuvant is applicable to a case when this case is admitted to a MDM.

When there is not enough information available or the case is not suitable with Adjuvant the clinician will decide not to use the nomogram.

Consulting Adjuvant ensures that decisions made related to cancer by clinical experts are more informed. Due to the provided information by Adjuvant on survival rates and risks clinicians made a deeper and considered decision. It also appeared that when using Adjuvant group consensus on treatment was earlier reached [14]. The use of Adjuvant could therefore possibly speed up the discussions in MDMs.

It would be most convenient to consult Adjuvant before the MDM. This way the information is at hand when needed during the discussion, which will increase the likelihood of using it. This will result in a more informed decision about the treatment of the patient. Using Adjuvant during the meeting is not favorable since it will cost time, and time is scarce during MDMs. Adjuvant is a tool that is used in the drafting of a treatment plan. Therefore using it after a MDM is not considered useful.

Integration of all four options

Integration of past cases

All four of the information sources are promising to use in MDMs. However, actual integration is not that easy, as current processes have to change. The use of past MDM cases for reference is probably the "simplest" to integrate, as it would only require a development of a search program . A system to submit patients, where all patient data can be entered already exists (www.mdmone.org/). This system contains all the information about the patient, from diagnosis to the treatment plan. The outcomes of discussions during MDMs are also recorded in the system and can always be audited if changes occur. If a link from this system to a database of past cases can be realized, searching for similar cases is made easier. In the paragraphs about the information sources it appeared that 'before the meeting' seems to be the best time to consult past MDM cases. Therefore it would be convenient if the search for similar cases were done before the meeting takes place. *Figure 1* shows the possible integration of the use of past cases into the MDM process.

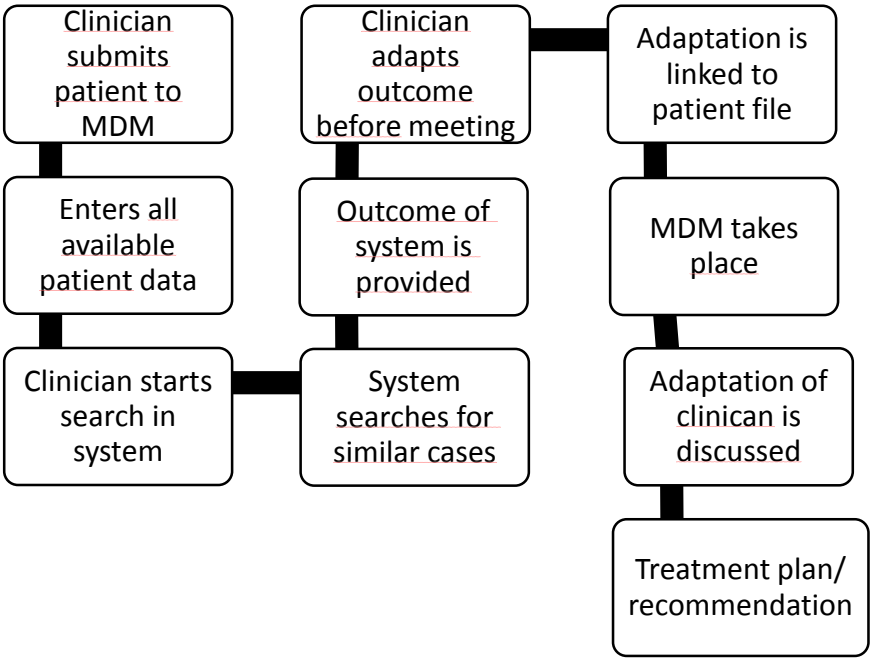


Figure 1: Use of past cases in MDM process

At first, a clinician submits a patient to the MDM by using the existing system. While submitting, available patient data is entered into the system. The clinician himself can start the search in the system, which uses the data the clinician entered and compares it to cases in the database. The outcome exists of an overview of similar cases. The clinician can read these outcomes and together with his own experiences can set up a provisional treatment plan. Then, during the MDM this treatment plan is discussed and adjusted until the best most appropriate treatment plan is developed.

A remark must be made on the records and the database. Records must be routinely stored and contain the right information. Only in this way will the database be useful and big enough. If the recording is done correctly and there is a large database available, integrating past cases into MDMs should be possible.

Integration of clinical guidelines and Cochrane library

Having already discussed past cases, the use of the other sources has been left undiscussed. Cochrane library and clinical guidelines can be consulted together since they both contain evidence-based information. Integrating these sources is more difficult than the integration of past cases. It costs significantly more time to consult the library and the guidelines,therefore a different approach is needed. Vaughan [15] has suggested a solution to split the MDM processes in two parts, so there will be two paths, one for standard treatment and one for complex cases. However choosing a path is an issue, so this should be done automatically. The system would have to follow some rules to determine if a case should be classified as complex, although it is rather complex what these specific rules should be. A related approach involves is allocating the standard/complex decision to a person or team. A team would be preferable because they could also perform the search after the decision has been made. This ’special’ team could consist of people from the designated field, such as a specialist, nurse, intern or a surgeon. With their relevant knowledge on treatments they can help to improve the search, which would be supervised by a case officer who has knowledge on MDM processes. It would be very useful for them to gather all the information for further study, increasing their knowledge. They may also have new insights they learned during their study which can be helpful in the decision making process. How the process of a MDM would look like with the integration of Cochrane library and clinical guidelines is shown in *figure 2.*

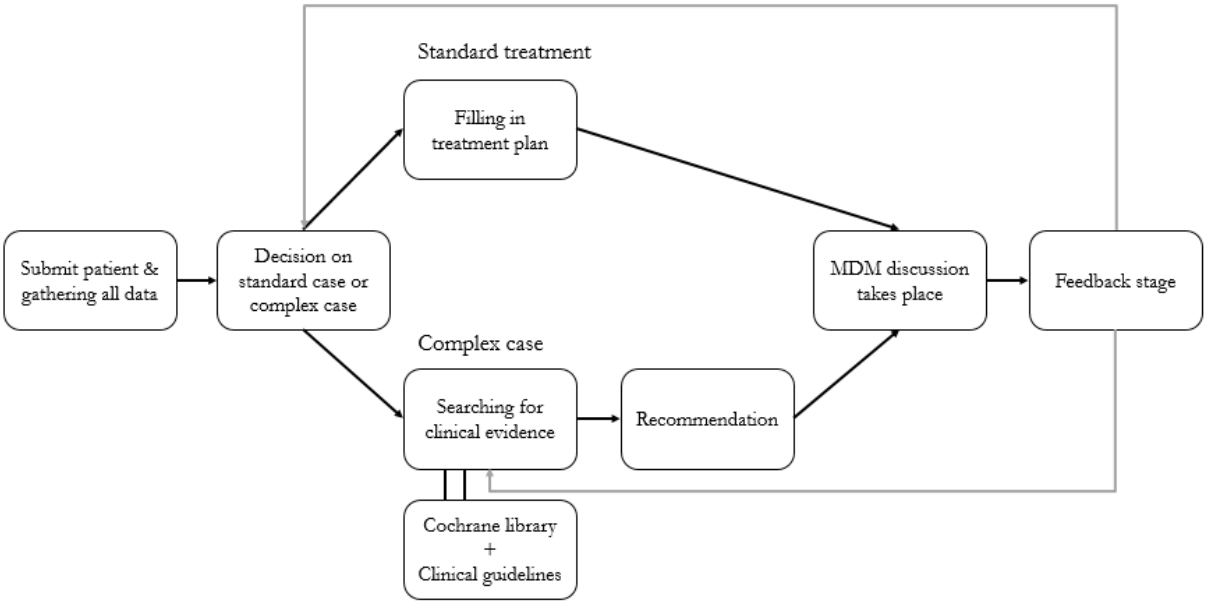


Figure 2: use of evidence based information in MDM process

The clinician submits the patient into the system, and thereby also enters all available patient data. Then a decision is made whether the case is standard or complex. If a case is classified as standard, this means the patient will receive standard treatment. Therefore a treatment plan can already be filled in before the MDM takes place. A complex case means there is more evidence needed. To look for this evidence, both the Cochrane library as clinical guidelines are sought, by a special team, mentioned earlier. From this search a recommendation on treatment follows, which is taken to the MDM where it will be discussed. The last stage is the feedback stage. The outcome of the MDM discussion are recorded and used as feedback on the decision stage as well as future searches for evidence. In this way both the stages will continue improving.

A remark on this plan is that it still takes a lot of time to consult the information sources. Therefore it is important that there is enough time between the submitting of the patient and the actual MDM. Only then an optimal outcome can be realized. Another point is the accessibility of the Cochrane library. All literature reviews of Cochrane library itself are freely accessible, however to access articles published in other journals sometimes a membership is required. For this reason the focus of the Cochrane library search are the literature reviews. Those contain a summary of the literature on specific subjects and this information can be useful to the decision making in MDMs.

Integration of Adjuvant! Online

When using the Adjuvant! Online tool it is most important that it is only used in cases it is applicable to, as it is designed for patients who already had surgery. Therefore, only in those cases is the use of Adjuvant possible. Integrating Adjuvant should be easy to perform, as it is an already existing tool so no further development is needed to adjust it for using in MDMs. *Figure 3* shows how this integration would look like.

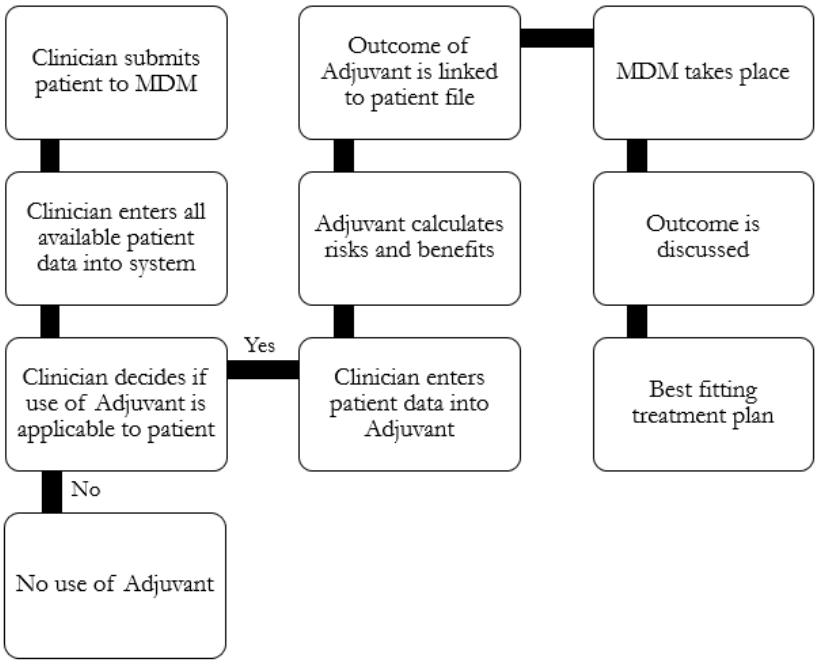


Figure 3: use of Adjuvant in MDM process

The first steps are the same, consisting of the submitting of the patient and all available patient data. Then in the third step the clinician decides if the use of Adjuvant is applicable to the patient he entered into the system. If not, the case will still be discussed in the MDM. If consulting Adjuvant is useful the clinician enters the patient data in the tool, the outcome of

which is linked to the patient file. This outcome is discussed during the meeting, and after the discussion the best fitting treatment plan is set up.

Summary

The optimal situation would be when all information sources are integrated in the MDM process. *Figure 4* gives an impression of what the MDM would look like, with the MDM process divided into 6 stages. Stage 1 is the submitting of the patient and the entering of all available patient data into the system. Then the first information source is Adjuvant. If the use of Adjuvant is applicable the outcome is linked to the patient file. When using Adjuvant is not possible, the clinician immediately proceeds to deciding on the complexity of the case. A standard case receives a standard treatment and does not need extra information. Therefore stage 3 and 4 can be skipped. A complex case requires extra information and uses stage 3 and 4 to gain this information. Stage 3 is the search for similar cases using a specific past cases search program. The clinician then adapts this outcome before the meeting and links it to the patient file. In stage 4 the clinician transfers the case to a special team, who search for extra clinical evidence using Cochrane library and clinical guidelines. The recommendation of this special team is linked to the patient file. The MDM takes place in stage 5, where discussion of the outcomes from all the different stages takes place and a best fitting treatment plan is composed. The last stage is the feedback stage. This is important because feedback will improves the other five stages and make them more efficient.

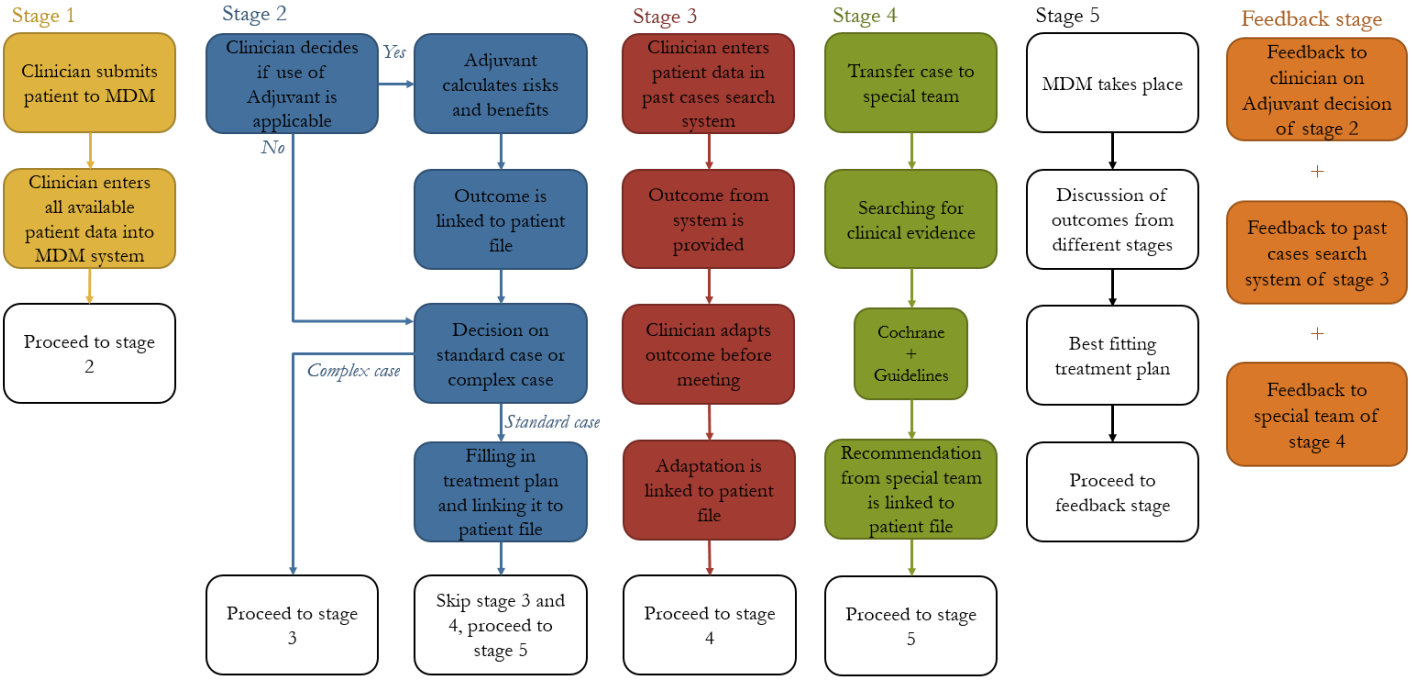


Figure 4: integration of all sources in the process of MDMs

Conclusion and discussion

There are four information sources that could contribute to the decision making in MDMs. The four sources are past cases, clinical guidelines, Cochrane library and Adjuvant! Online. Those sources require a different way of integration into the actual process of a MDM, although consulting the sources 'before the MDM' is considered as most efficient. Clinical guidelines and Cochrane library can be consulted together. They both contain evidence-based information. To decide if a case needs this extra information a decision on standard or complex case is made. A complex case will require a search for more information. The results

of the search will be linked to the patient file. When the actual MDM takes place all gathered information can be consulted through the patient file. The use of past cases requires a system that can search for similar cases. This system has yet to be created but can have some similarity with case-based reasoning systems. Finding similar cases can be useful when a case is complex and clinician want more information on previous decisions.

Another development that supports the possible benefits of having a search program for past cases is a series of apps called 'Prognosis app' (http://www.prognosisapp.com/). These are designed as medical educational aids for doctors, nurses, medical students and other health professionals. This app is based on reviewing case scenarios provided by an editorial board, existing of 120 and more specialist physicians from all over the world. A case is provided by the app and the user has to select investigative and therapeutic options to eventually make a diagnosis. An expert analysis is provided, which gives the user a view on the optimal pathway. This way, users refresh their knowledge. The app is widely used and therefore can be considered useful. Comparing its use to the practice of consulting past cases within a MDM is useful because the process is almost the same. Clinicians would consult past MDMs when they need more information for the case they are treating and the information they retrieve from the database can be applied to the concerning case and to support the decision making process. This form of case reviewing, which is similar to case reviewing of the 'Prognosis app', can contributes to the knowledge of the clinicians.

A limitation to this study is that experiences in practice are not taken into consideration. The ideas are solely based on literature. However, future research can be done next to determine if clinicians think the proposed information sources can contribute in the decision making process during MDMs and if they feel they would really use the support provided by the sources. This could be the next step to integration of evidence-based knowledge to MDMs.

The ideas addressed in this paper are meant to give an overview of what could be possible to support in the decision making process of MDMs. Further research is needed to determine how the different ideas can be actually implemented in current practice.

References

1 Australian Institute of Health and Welfare 2014. Cancer in Australia: an overview 2014. Cancer series No 90. Cat. no. CAN 88. Canberra: AIHW.

2 National Breast and Ovarian Cancer Centre. Multidisciplinary meetings for cancer care. A guide for health service providers. 2005.

3 Christopher Bain, Gitesh K. Raikundalia, Tamara Shulman, Rajesh Sharma. Multi-disciplinary Team Meetings for Cancer Care: Results of an Australian Survey. Journal of Cancer Research and Treatment. 2013;1(1): 12-23

4 State government Victoria. Multidisciplinary cancer care: Literature review. 2012.

5 Tammie L. Di Pietro, Diane M. Doran, Gregory McArthur. Supportive Decision Making at the Point of Care. Refinement of a Case-Based Reasoning Application for Use in Nursing Practice. Computers, Informatics & Nursing. 2010;28(4): 235-240

6 Rainer Schmidt & Lothar Gierl. Case-based Reasoning for Medical Knowledge-based Systems. Studies in Health Technology and Informatics. 2000;77:720-5.

7 C Tsatsoulis & H A Amthauer. Finding clusters of similar events within clinical incident reports: a novel methodology combining case based reasoning and information retrieval. BMJ Quality and Safety. 2003;12: 24-32. doi: 10.1136/qhc.12.suppl_2.ii24

8 David A. Davis, Anne Taylor-Vaisey. Translating guidelines into practice: A systematic review of theoretic concepts, practical experience and research evidence in the adoption of clinical practice guidelines. Canadian Medical Assocation Journal. 1997;157:408-16

9 NHMRC. How NHMRC develops its guidelines. www.nhmrc.gov.au/guidelines-publications/how-nhmrc-develops-its-guidelines, 2014.

10 Anna R Gagliardi, Melissa C Brouwers, Valerie A Palda, Louise Lemieux-Charles and Jeremy M Grimshaw. How can we improve guideline use? A conceptual framework of implementability. Implementation Science 2011;6:26. doi:10.1186/1748-5908-6-26

11 Belinda A. Campbell, David Ball, Françoise Mornex. Multidisciplinary Lung Cancer Meetings: Improving the practice of radiation oncology and facing future challenges. Respirology. 2015;20: 192-198. doi: 10.1111/resp.12459

12 Richard Grol, Johannes Dalhuijsen, Siep Thomas, Cees in 't Veld, Guy Rutten, Henk Mokkink. Attributes of clinical guidelines that influence use of guidelines in general practice: observational study. British Medical Journal. 1998;317

13 Cheong-Lieng Teng. Clinical knowledge management at the point of care. International e-Journal of Science, Medicine & Education. 2012: 6(1): 137-141

14 Richard J. Epstein, Thomas W. Leung, Joyce Mak, Polly S. Cheung. Utility of a Web-Based Breast Cancer Predictive Algorithm for Adjuvant Chemotherapeutic Decision Making in a Multidisciplinary Oncology Center. Cancer investigation. 2006;24(4): 367-373\

15 Stephen Vaughan. Multidisciplinary Meeting Central Business Process, narrative description. Epworth healthcare internal report, 2004.