

# **EU Joint Action: Achieving Comprehensive Coordination in ORgan Donation throughout the European Union**

## **Work Package 5 - Increasing the collaboration between donor transplant coordinators and intensive care professionals**

### **FINAL REPORT**

### **A Rapid Improvement Toolkit**

**April 2015**



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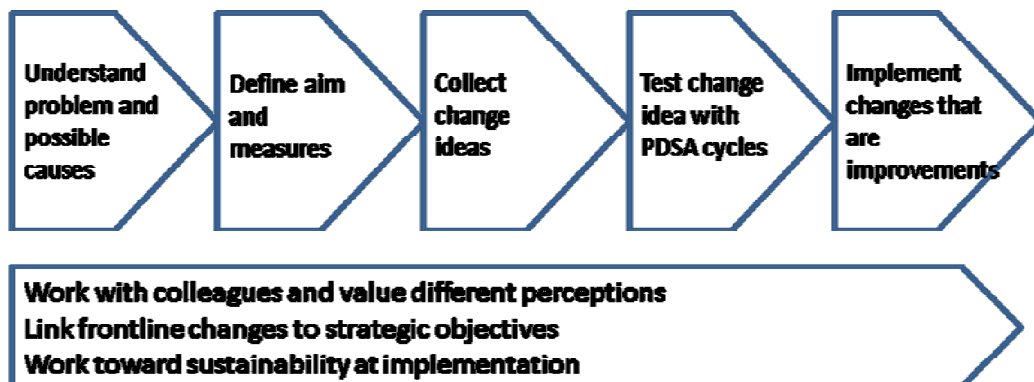
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## 1. An introduction to improvement methodologies

Organ donation is a complex, multi-stage clinical pathway that is dependent upon a timely and effective collaboration between hospital staff, donor coordination services and the organ retrieval team. The possibility for organ donation may be lost at one of several stages of the pathway, most often through failures in donor identification and referral, family approach and consent. A number of national publications, such as the UK Organ Donation Taskforce Report<sup>1</sup> and the range of Good Practice and Benchmarking Guidelines available from Organización Nacional de Trasplantes<sup>2</sup> (ONT)

ONT, have made high-level recommendations on how donation might be improved. However, hospital staff who are trying to improve performance in complex systems such as deceased organ donation may find it helpful to turn to tools that allow specific barriers to improvement to be identified and interventions to be designed and tested against them. These tools are sometimes referred to as service improvement methodologies, and represent a portfolio of tools which allow problems to be defined, understood and resolved in a safe and sustainable fashion. These various steps are summarised in **Figure 1**.

**Figure 1: the steps of service improvement**



Medical staff are sometimes sceptical about the value of such methodologies, although this is usually because of the way in which they have been presented in the

<sup>1</sup> Organs for Transplants. A Report from the Organ Donation Taskforce. London: Department of Health 2008. Available from

<http://www.nhsbt.nhs.uk/to2020/resources/OrgansfortransplantsTheOrganDonorTaskForce1streport.pdf>

<sup>2</sup> Good Practice Guidelines in the Process of Organ Donation. Organización Nacional de Trasplantes 2011. Available from

[http://www.ont.es/publicaciones/Documents/VERSI%C3%93N%20INGLESA%20MAQUETADA\\_2.pdf](http://www.ont.es/publicaciones/Documents/VERSI%C3%93N%20INGLESA%20MAQUETADA_2.pdf)

past and the type of problems they have been used to tackle. Whilst there is no doubt that some of the obstacles to deceased donation require national resolution – for instance, when seeking to resolve the ethical and legal obstacles to Maastricht Category III DCD – there are many aspects of the deceased donation pathway that are amenable to local improvement using these methodologies. Indeed, these methodologies have much in common with the scientific method - identifying a problem, generating a hypothesis and testing it – and if used with an open mind and applied to real, important and appropriate problems can be powerful effectors of service improvement.

## 2. Understanding the problem and its possible causes

*“If I had one hour to save the world, I would spend 59 minutes defining the problem and one minute finding a solution.”*

*Albert Einstein*

Well designed audit that generates quantitative data allows the size and importance of the problem / opportunity to be estimated and many service improvement projects will start with such data. However, it is vital that this is complemented by qualitative analysis that is conducted through wide-reaching and structured discussions with clinical colleagues that covers their experiences, frustrations and concerns. This will provide a better understanding of the problem and its root causes.

Qualitative analysis requires the insight and experience of those who are involved in the process in question. It is best performed in a group setting in which as many different perspectives as possible are represented. The outcome of this analysis will only be as good as the people who attend and gaps will result if key people / specialties are missing. Whilst it may seem obvious who are involved in a pathway, failure to identify and involve the right stakeholders at the beginning can doom a project to failure or result in avoidable delays. The organ donation and transplantation pathway is particularly complex, and very often crosses specialties, professions and institutions. Careful, structured identification of who should be involved and how this should happen might save a considerable amount of effort in the future.

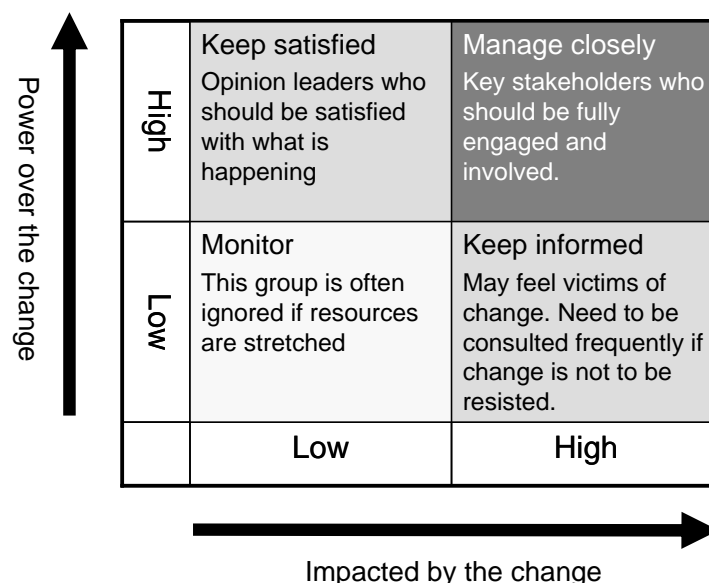
The analysis usually starts with an exercise in which the group maps out the process from their various perspectives, remembering that each perspective is important and valid. When the precise location and nature of the problem has been identified, the group is asked to consider it's causes, asking why repeatedly until the root cause of the problem has been defined. Tools such as fish bone diagrams (see Section 2.4) are particularly helpful when there may be many potential causes, allowing root causes to be distinguished from more subordinate factors and their nature categorised. It is vital to respect all contributions and to capture all change ideas that may be suggested during the discussion. The discussion is as important as any end product and there should be no blame when problems and their possible causes are identified.

### 2.1 Stakeholder analysis

Stakeholder analysis is one of the first steps to take when considering a change project. It is important that as many stakeholders as possible are identified and that

their concern or interest in a particular pathway or process is understood. Different groups of stakeholders are involved in pathways to different extents and in various ways, and this should determine how they should be involved when a problem is being analysed and change ideas considered. Stakeholders are very often distinguished according to the power or influence they have over a particular project and the extent to which any change in a process might impact upon them. Stakeholder matrices can be used to help understand these differences and ensure that key stakeholders are not overlooked and that resources are used most effectively – the more important a stakeholder, the more the project time that will be needed to be allocated to them. A simple stakeholder matrix is shown in **Figure 2**.

**Figure 2: Stakeholder matrix.** This is the simplest kind of stakeholder matrix, in which stakeholders are categorised according to two variables – the extent to which they can exert influence or power over a process and the extent to which they have an interest in or are impacted by a change in that process.

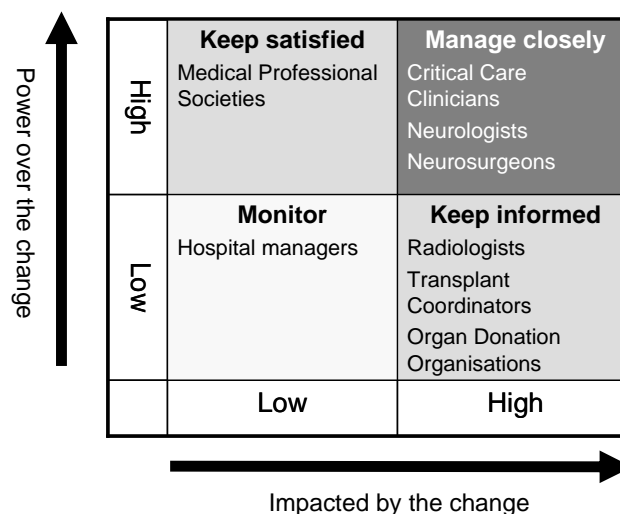


### Stages in stakeholder analysis

1. Gather together a group of experts and ask them brainstorm the groups and individuals who might be in some way influenced by or involved in a process undergoing change. This can be a very long list in complex pathways.

2. Categorise each stakeholder according to the extent to which they will be influenced by or have influence over a proposed change. Avoid the temptation to consider all groups as key stakeholders and be prepared to review allocations as the exercise continues.
3. Consider to what extent groups are likely to be supportive of or resistant to a likely change.
4. Use all of this information to determine how groups are to be engaged / informed. Give particular attention to important stakeholders who are likely to be resistant to change, and develop plans to either overcome their opposition or work around it. An example of stakeholder analysis applied to an element of the organ donation pathway is shown in **Figure 3**.

**Figure 3: An example of stakeholder analysis for the diagnosis of brain death pathway**



## 2.2 Understand the problem: process mapping

Rarely does a single healthcare worker have a complete understanding of a clinical pathway, and this is particularly so for organ donation where there is a necessary separation between critical care and transplantation. Process mapping helps to describe journeys through complex systems, allowing the individual steps in the process to be defined and the people involved at each stage to be identified. They are visual representations of the pathway which should describe things as they are rather than how they should be. The 'participant' in the journey is often referred to as a user, and may be a patient, a blood sample, referral letter etc. The mapping exercise should highlight the steps that are problematic, for instance because they are the cause of delays, unnecessary, or points which guidance is lacking or ignored.

Various templates for process mapping are available. These include flow diagrams, value stream mapping, spaghetti diagrams or patient walk-throughs.

## Preparation

Having the correct materials needed to capture ideas and insights will help with the exercise. Materials such as flip chart paper (or better still a long roll of plain wallpaper as a process map can be very long), marker pens, Post-It® notes and suitable adhesive materials allow information and ideas to be captured and shared with the whole group.

## Stages

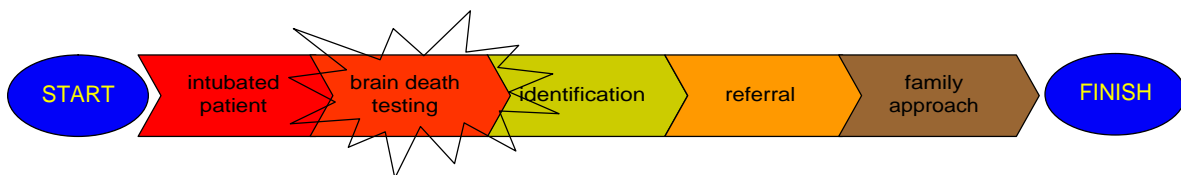
1. Define the process and be very clear about the first and last step
2. Invite a group who have experience of the process. They need to be people who know the pathway well - the process map will only be as good as the people who attend.
3. Allow and even encourage the map to cross departmental boundaries – you want an end to end description of the process rather than a perspective from a single viewpoint.
3. Start by mapping the process at a high level of no more than 10 steps and set a time limit of no more than 20 minutes. This will help define the scope (start and end of the process) and allow the group to agree where the main problems are.
4. Map the problem stage in more detail.
5. As a group look carefully at the whole process map and ask:
  - Where are the problems for those involved in the pathway? For example is there a resource issue, lack of knowledge, information etc
  - How many steps are there?
  - How long between each of the steps?
6. Then look at each step and ask:
  - How long does each step take?
  - Can it be eliminated?
  - Can it be done in some other way?
  - Can it be done in a different order?
  - Can it be done in parallel?



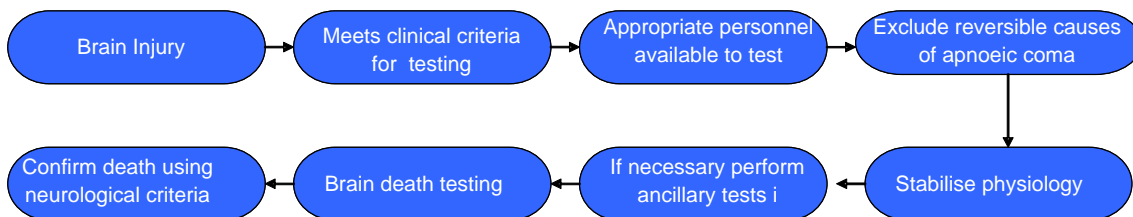
- Is it being done by the most appropriate person?

Below are two examples of simple process maps for two different parts of the organ donation pathway - brain death testing and identification and referral from the emergency department.

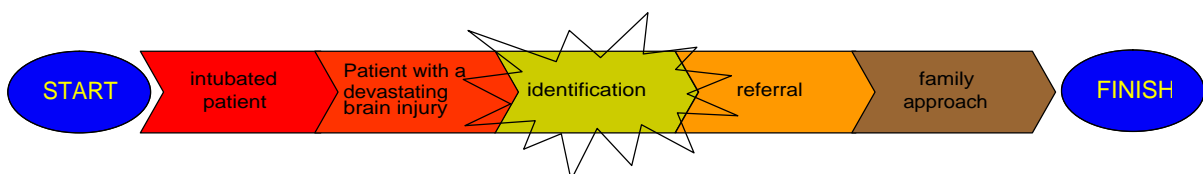
**Figure 4: high level process map for part of the DBD pathway**



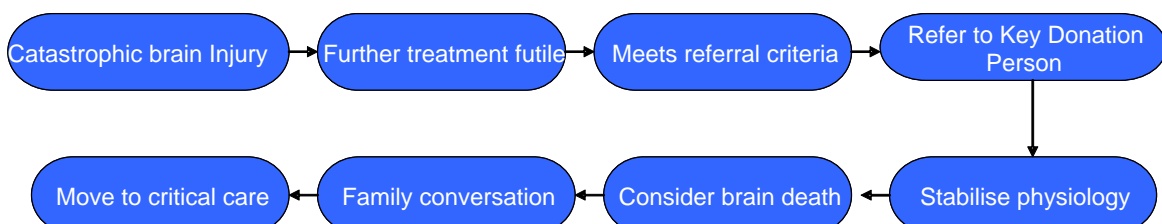
**Figure 5: detailed process map of brain death testing**



**Figure 6: high level process map of donation from the Emergency Department**



**Figure 7: Detailed process map of donor identification in the Emergency Department**



**Note:** Make the discussion about what really happens, not what should happen or what someone thinks happens. More information on process mapping can be found at

[http://www.scottishhealthcouncil.org/patient\\_public\\_participation/participation\\_toolkit/process\\_mapping.aspx](http://www.scottishhealthcouncil.org/patient_public_participation/participation_toolkit/process_mapping.aspx)

### 2.3 Causes of the problem: root cause analysis

A root cause is a cause that once removed prevents an undesirable event from recurring. Root causes need to be distinguished from causal factors, which are factors that affects an event's outcome, but might not be root causes and whose removal may not always improve outcomes. By identifying the root causes of an undesirable outcome – for example, failure to refer a potential donor – it becomes possible to develop interventions that are most likely prevent its recurrence.

There are various ways in which root causes of an undesirable outcome can be identified.

#### Five 'whys?'

Repeatedly asking why something has happened allows the core of a problem to be identified. Although it is often advised that 'why?' should be asked five times before the root cause can be identified, this is simply a guide. The real key is to avoid assumptions and logic traps and encourage the team to keep asking why until they agree that the root cause has been identified.

#### Example

Brain death tests were not performed on a patient with catastrophic brain injury who fulfilled the national criteria for testing. **Why?**

The doctor in charge said that they were not needed and that he was just going to withdraw ventilation on the grounds of futility. **Why?**

The doctor thought that the patient could not be an organ donor. **Why?**

The intensive care unit did not have a policy to always consult with the donor transplant coordinator to check on the possibility of organ donation. **Why?**

The root cause – there were no established relationships between the hospital critical care services and the organ procurement organisation for automatic referral of potential donors that would allow the possibility of donation to be assessed by the transplantation team. Implementing agreed referral and assessment criteria is an

essential component of effective donation programmes and should ensure that all dying patients are given the opportunity for donation to be considered. Simply informing the doctor of the error may prevent recurrence in his / her practice, but will not prevent the problem happening again when another doctor is in charge.

For further information on 'the five whys?', go to [http://www.institute.nhs.uk/quality\\_and\\_service\\_improvement\\_tools/quality\\_and\\_service\\_improvement\\_tools/identifying\\_problems\\_-\\_root\\_cause\\_analysis\\_using5\\_whys.html](http://www.institute.nhs.uk/quality_and_service_improvement_tools/quality_and_service_improvement_tools/identifying_problems_-_root_cause_analysis_using5_whys.html)

## 2.4 Cause and effect analysis (fishbone diagrams)

Cause and effect analysis helps the causes of a problem to be explored in detail and the root causes distinguished from causal factors. Fishbone diagrams, are often used to support cause and effect analysis, and are particularly useful for complex problems where a number of different types of root causes may be present, with each bone representing a different category. It is common for these categories to include people, place, policies and procedures.

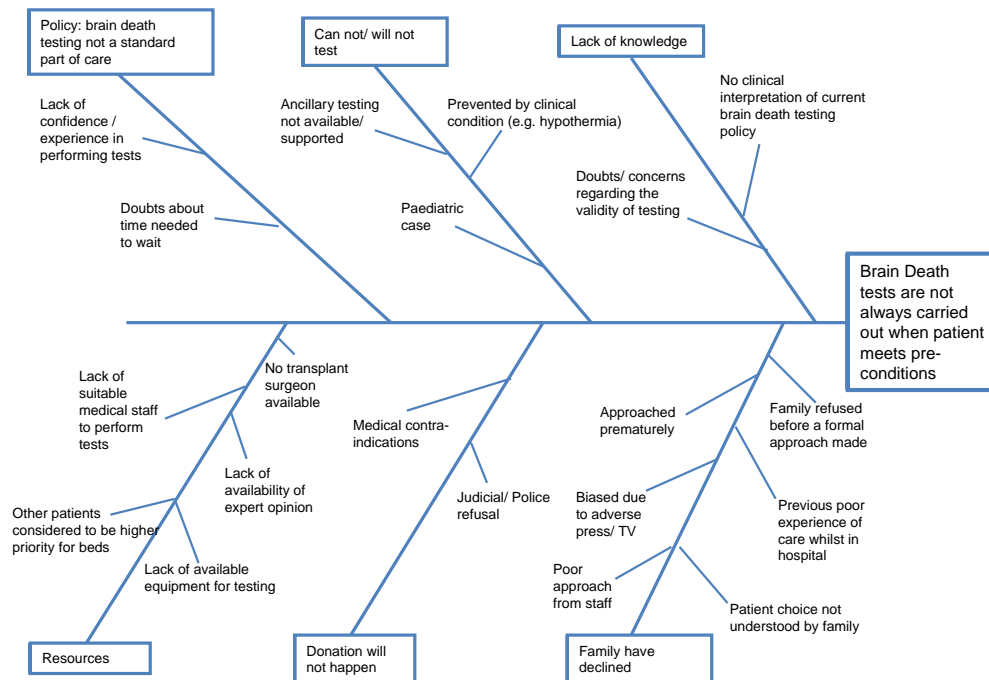
**Preparation:** A flip chart, pens, post it notes, template for fishbone diagram

**Stages:** For each problem

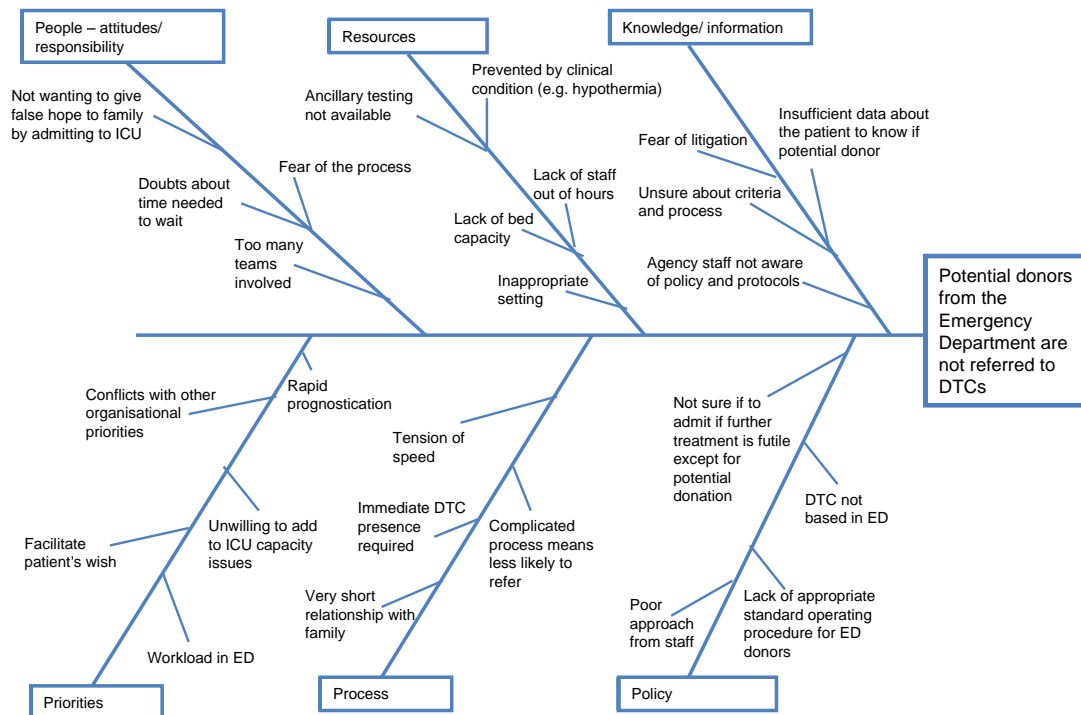
1. Define the problem or effect being looked at, and place this in the head of the fishbone diagram.
2. Gather together a group who are affected by the problem, avoiding single-speciality groupings
3. Generate ideas for all the causes of the problem and put each cause on a post it note
4. Group the causes or factors for the problems into categories e.g. people, resources, organisation, education and training, working conditions, policies. Add any categories the group think are necessary. Into each category can be added 'primary' elements or factors and into these can be drawn 'secondary' elements or factors. Do this for every category.
5. As a group agree which are the major causes of the problems and of these which are in the control of the group. To confirm the thinking of the group, data may be needed or the opinion sought from others who are not present.

Two examples of fishbone diagrams relating to common issues in organ donation are given in **Figures 8 and 9**.

**Figure 8: fishbone diagram examining the failure to perform brain death tests**



**Figure 9: fishbone diagram examining the failure to refer a potential donor from the Emergency Department**



For further information on the use of fishbone diagrams in root cause analysis go to [http://www.ehow.com/how\\_5201452\\_draw-fishbone-diagram.html](http://www.ehow.com/how_5201452_draw-fishbone-diagram.html)

### 3. Service improvement models

All too often in healthcare change ideas are introduced without sufficient planning and testing and they may fail as a result. Although this may be because the idea itself was flawed, it may also be because it was too ambitious as a first step, was not properly monitored or because it was not trialled in a controlled environment that allowed its effect to be properly evaluated before being rolled out more widely. This leads to professional frustration and service stagnation.

A number of improvement models are available to support more controlled and more successful service improvement, the 'Plan, Do, Study, Act' (PDSA) model being a particularly well known example. PDSA methodology is based upon the principles that

- Change ideas should be well thought out
- Change ideas should be tested in small / controlled environments
- The impact of change ideas should be evaluated before being implemented across whole organisations
- Multiple PDSA cycles may be required to improve complex systems such organ donation and transplantation.

The Model for Improvement is a simple yet powerful tool for accelerating improvement that embraces PDSA methodology<sup>3</sup>. It represents a framework for developing, testing and implementing changes that lead to improvement, and has been used successfully to improve healthcare processes in many parts of the world. The Model is attractive for several reasons – it is simple, it reduces risk because it starts with small and manageable pilots, it allows change ideas to be quickly assessed and it lends itself to the early involvement of those most likely to be affected by the change idea.

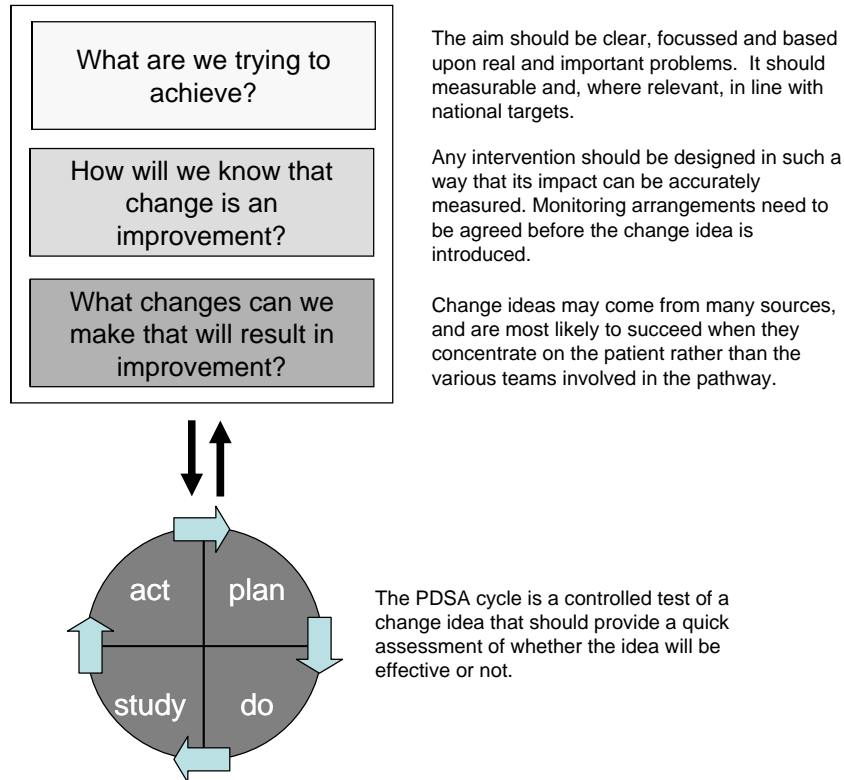
There are two principle stages to the Model (**Figure 10**)

- Asking three fundamental questions
- Applying the PDSA cycle to test change ideas

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<sup>3</sup> Langley G, Moen R, Nolan K, Nolan T, Norman C, Provost L, (2009), *The improvement guide: a practical approach to enhancing organizational performance 2<sup>nd</sup> ed*, Jossey Bass Publishers, San Francisco

**Figure 10: The Model for Improvement**



### 3.1 What are we trying to achieve?

The aim of the change intervention should be as clear and well defined as possible. Although staff should not fear problems that are significant – indeed, the problem should be of sufficient importance to merit the attention – the aim of the project should be SMART (specific, measurable, achievable, realistic and time-based). Furthermore, it may help if the pilot is directed against a problem that is the subject of national attention. There should also be clarity about where the change idea will be piloted and which group of patients it will apply to.

### 3.2 How will we know a change is an improvement?

*Any improvement is a change, but not every change is an improvement*

E Goldratt<sup>4</sup>

<sup>4</sup> Goldratt E (1990) *Theory of Constraints*, North River Press, Massachusetts

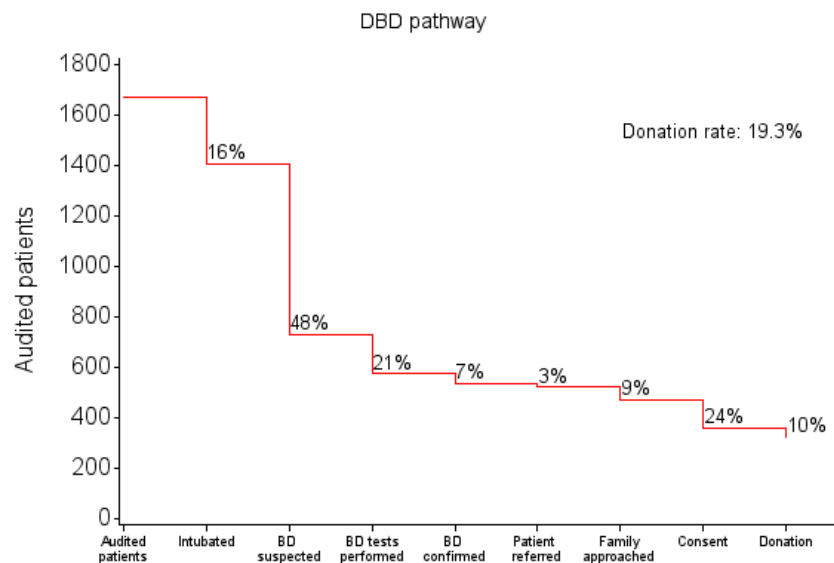
Many organ donation problems are complex and the subject of a number of conflicting influences. Some change projects flounder because it is not possible to be certain that an improvement has been made or that it can be attributed with certainty to a given intervention. As a result, the change idea may not be applied more widely and the potential benefits may be lost. It is vital that measures of improvement are developed and agreed upon at the same time as the aim of the pilot is being defined, and that this includes baseline data against which the outcome of the change idea can be assessed.

### Stages

1. Clearly define a few key measures that are linked to the improvement aim.
2. Agree how the data is to be collected, by whom and when. Ensure that there is baseline data available against which outcome data can be compared and the success (or otherwise) of the change idea evaluated.
3. Agree how the data will be presented and analysed (**Figure 11**).
4. Analyse data and review measures
5. Repeat: collect analyse and review, collect analyse and review etc until you are sure the improvement is sustained.



**Figure 11: Quantitative description of the flow of potential DBD donors through the donation pathway. (This was the agreed method of describing headline audit data collected as part of Work Package 5 of the ACCORD project.)**



### 3.3 What changes can we make that will result in the improvement we want?

When the problem is clear and improvement aims and measures have been developed, change ideas need to be generated and collected. These are ideas for changes to make the improvement required. Gather together and discuss the change ideas of colleagues and from other sources of change such as professional peers, other organisations and evidence from published researched. But remember that they are still only ideas at this stage - they need to be tested in context with staff, patients and facilities.

Organ donation is a complex pathway that involves many different specialities and multiple healthcare organisations. It is easy for the care pathway to become fragmented in such circumstances and for separate teams to view things from their own individual (and very often very different) perspectives rather than that of the 'user'. However, the closer change ideas are to the pathway the patient follows the more likely they are to result in improvement.

### 3.4 PDSA cycles to test change ideas

A PDSA cycle allows a change idea to be tested in a small and controlled environment before implementing it fully to see if it **will** be an improvement and to

learn from things that do not work. Testing a change idea in a small environment minimises the potential for service disruption if things go wrong and also enables a change idea to be customised to local conditions and unanticipated consequences to be evaluated. PDSA cycles are able to give answers quickly and in so doing promote staff engagement and learning. However, only when a change idea has been tested and evaluated sufficiently should it be considered for wider implementation.

### Speaking in PDSA language

- P**      ▶ We planned to..... (state the basic aim)
  - ▶ In order to..... (tie it back to the aim)
- D**      ▶ What we did was..... (brief description of actions)
- S**      ▶ Looking at what happened what we learnt was..... (lessons learnt)
- A**      ▶ What we plan to do next is..... (state next plan)

**Preparation:** Generate change ideas to be tested according to the aim and improvement measures. Agree which one(s) to test.

**Stages:** For each change idea:

- 1. Plan:** Be clear about the change idea being tested, the questions that need to be answered and what is expected to happen. Plan how the cycle will be carried out, specifying who will run the test of the change idea, where and when it will be tested, what will be done and what the expected outcomes might be.
- 2. Do:** Do the test as planned and record the agreed measures and outcomes carefully. Ensure that any problems or other unexpected events are also well documented.

**3. Study:** Compare the measured outcomes to baseline data and the predicted benefits. Ask those who were involved and study what actually happened, noting problems and other unexpected events. Summarise the outcome of the pilot.

**4. Act:** As a team decide what should happen next? Should the same change idea be kept but the test extended, should the change idea be adapted and tested again or should another change idea be tested. Make the decision based on what was learnt from the test cycle.

It is possible that a single PDSA cycle will show a change idea to be effective enough to be applied more widely or even adopted into routine practice. However, it is wise to anticipate that several cycles might have to be run before a change idea is agreed to be an improvement and adopted into practice.

**Notes:** when running PDSA cycles

- Don't think too big. Implement a small simple change as this is more likely to be successful.
- Don't be too vague or too detailed - some detail is needed but to a practical, not obsessive, level.
- Make sure the results are **acted** on.
- In practice more than one PDSA cycle can be run at a time as long as they are small and simple.

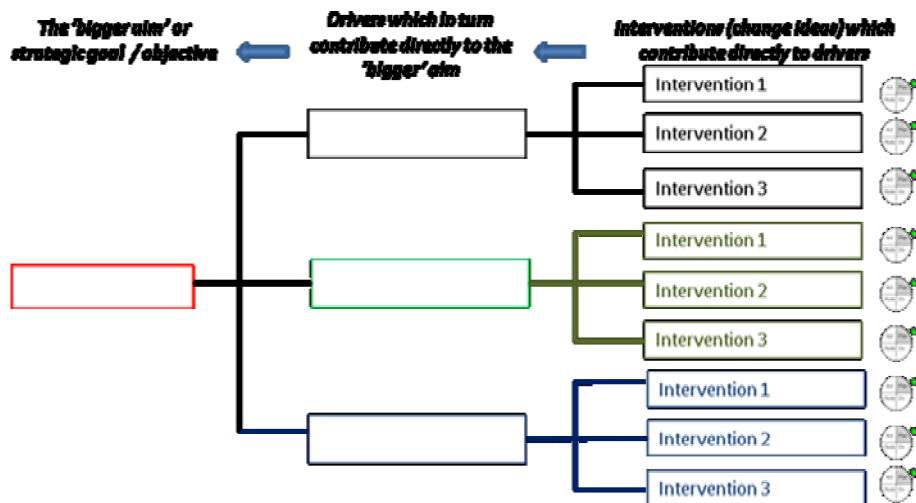
#### 4. Linking frontline changes to strategic objectives: driver diagrams

A driver diagram allows the overall programme ambition (for example, achieving self-sufficiency in organ transplantation) to be described in terms of a series of subordinate goals and specific projects. It enables an entire programme of work to be described within a logical framework that gives the programme both clarity and focus to those involved in it. The diagram is able to highlight inter-dependencies between individual interventions and tests of change ideas and also provide the basis for measurement.

As a minimum a driver diagram will have three levels (**Figure 12**):

- the strategic outcome (or goal, vision or strategic objective),
- the high level factors or projects that needed to achieve the strategic outcome (primary drivers) and
- the specific interventions or change ideas being tested to deliver each of the primary drivers.

**Figure 12 Driver Diagram Model**

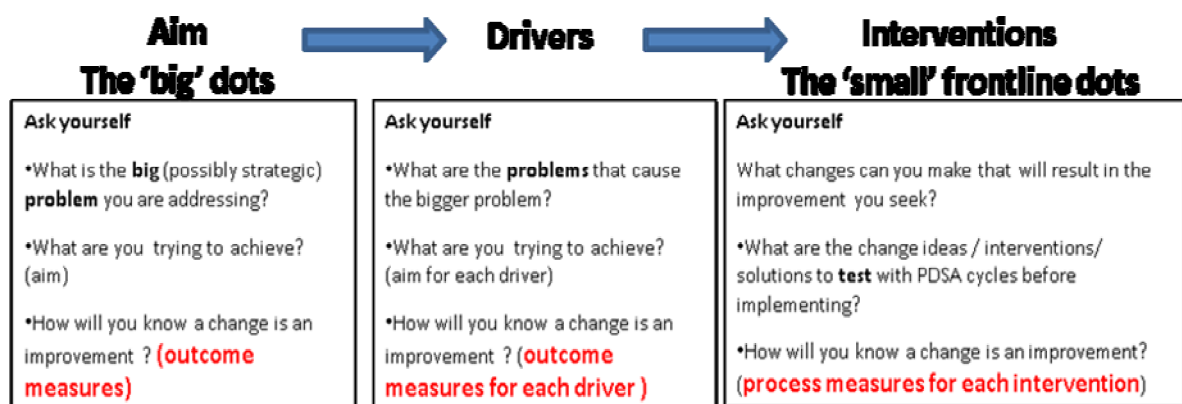


#### Steps

1. Define the strategic outcome.
2. Gather together a group of people who know about the subject

3. Generate ideas to identify the key things which need to be improved to achieve the outcome
4. Cluster the ideas to see if groups represent a common driver
5. Generate the interventions (change ideas) linked to each of the drivers. (Figure 13)

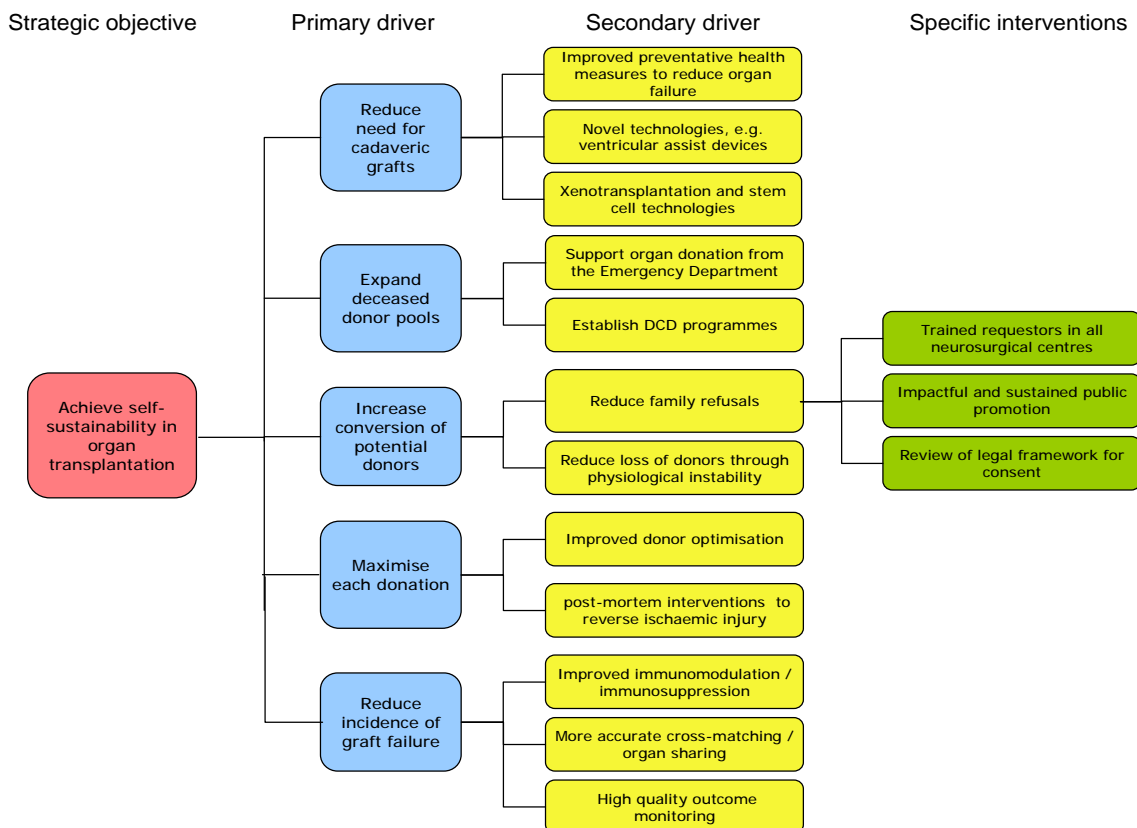
**Figure 13 Linking interventions to strategic objectives**



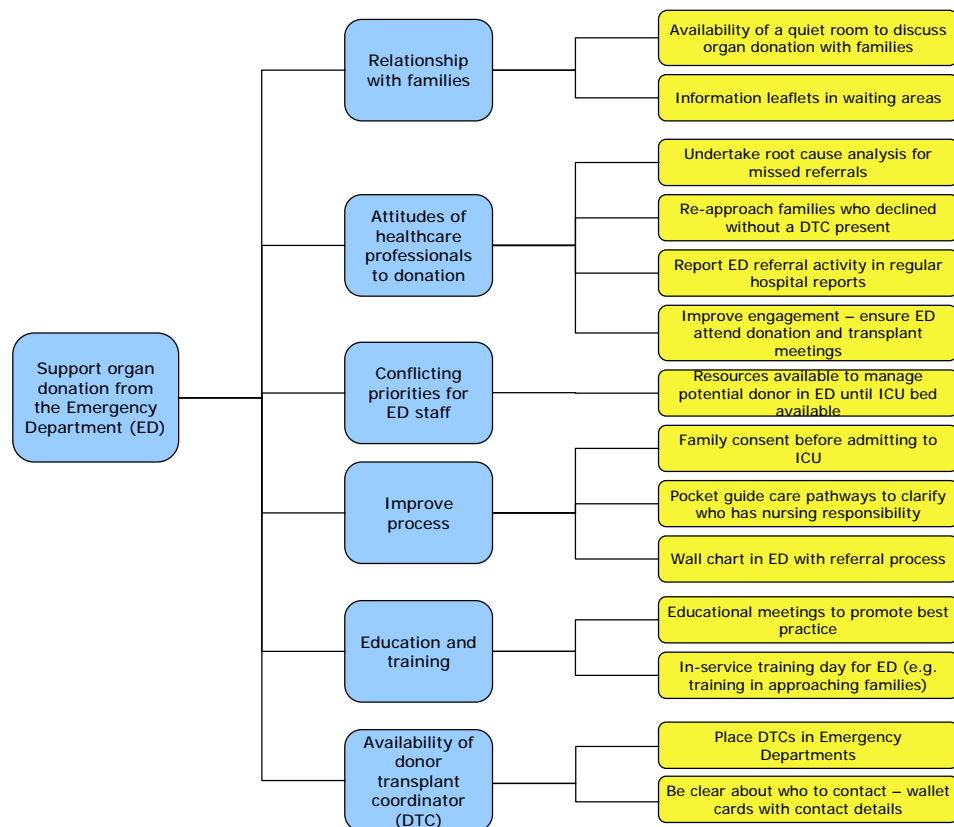
**Note:** Some frontline staff will find it easier to work from the bottom up, starting from specific interventions to test change ideas that relate directly to the process and which will in turn will contribute to improvement in the primary drivers and delivery of the overall strategic outcome. Driver diagrams help to link every intervention to a strategic goal of the service or organisation. They can be very complex when used to describe national strategies that are designed to be delivered over the course of several years and which are applied to an entire clinical pathway such as organ transplantation. For example, the driver diagram shown in **Figure 14** summarises in the broadest of terms the strategy for organ donation and transplantation in the UK that was published in 2013<sup>5</sup>. Such diagrams may become so complex that subsidiary diagrams will be necessary to provide more specific focus on individual elements of a strategy. This is shown in **Figure 15**, where a secondary driver from the diagram in **Figure 14** becomes the direct focus of more detailed analysis.

<sup>5</sup> Taking Organ Transplantation to 2020: A detailed strategy (2013) available at [www.nhs.uk/to2020](http://www.nhs.uk/to2020)

**Figure 14. A partial driver diagram that might describe a long term national strategy aimed at achieving self sufficiency in organ transplantation. Note that primary drivers are supported by a series of secondary drivers, which turn will need to be supported by a large number of specific tests of change ideas and interventions.**



**Figure 15. A detailed driver diagram relating to organ donation from Departments of Emergency Medicine**



## 5. Implementation, sustainability and teamwork

*Quality improvement often takes longer than expected to take hold and longer still to become widely and firmly established within an organisation*

Chris Ham

*'Sustainability is not only when new ways of working and improved outcomes become the norm but the thinking and attitudes behind them are fundamentally altered and the systems surrounding them are transformed in support'*<sup>6</sup>

### 5. 1 Implementation and sustainability

When a change idea has been tested and shown to have led to an improvement, then it should be considered for adoption into practice. It is important that part of the implementation plan considers how the change will be sustained once the particular efforts around implementation have come to an end. This will help prevent frustration and wasted effort, as well as ensure that an opportunity to improve patient care is not missed.

Sustainability is dependent upon a number of factors, the most important of which are staff involvement and effective leadership. By paying attention to these factors and planning the implementation of successful change ideas, the likelihood of sustainability is increased. The National Health Service in England has developed a Sustainability Model which is designed to help teams ensure that the changes they implement are sustained over time and survive changes in personnel etc. The model describes ten factors that influence sustainability (**Figure 16**), and has been designed to support 'local' interventions both before and at periods during implementation.

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<sup>6</sup> Lynne Maher, David Gustafson, Alyson Evans (2006) *Sustainability Model* NHS Institute for Innovation and Improvement



**Figure 16: The ten factors that influence the sustainability of change**



The Sustainability Model allows teams to estimate the likelihood of implementation being sustained and whether additional efforts will be required to achieve this. This is done by assessing the nature of the change against each of the ten factors identified in the Model and from this computing a measure of the likelihood of sustainable implementation. For more details on the NHS Sustainability Model go to [http://www.qihub.scot.nhs.uk/media/162236/sustainability\\_model.pdf](http://www.qihub.scot.nhs.uk/media/162236/sustainability_model.pdf)

### **Preparation:**

#### **Stages**

1. Gather the core team together. This should include those who will be involved in the change
2. Give each person in the team a copy of the Sustainability Model and ask them to assess the improvement against each of the ten factors listed in the model.
3. Share the individual assessments with the whole group. Did everyone agree, and if not, why not? (Remember people will see things differently based on their experience and role, and it is very important to understand why they see things differently.)
4. As a team agree an overall score for each factor.

- a. With an overall score of 55 or over there are '*reasons for optimism*' that the improvement will be sustained. With this score implementation can start.
- b. If the score is below 55 additional actions are likely to be required to support sustainable implementation, and it might be necessary to delay implementation until these actions have been taken. Identify the two lowest scoring factors and agree actions that could be taken to increase these scores. Repeat again in about 6-8 weeks to see if the scores for the problem factors have improved.

## 5.2. Team work

Improvement requires a team approach from the very beginning. A single individual will see a problem from only one perspective, so no matter how important that individual is, other perspectives are needed. Furthermore, change is more likely to be adopted by a team if they have been involved in the change idea from an point.

Numerous models and frameworks are available to to help understand and value differences in teams and individuals e.g. <http://www.myersbriggs.org/my-mbti-personality-type/mbti-basics> (Myers Briggs Type Indicator), Belbin Team Roles <http://www.belbin.com> Merrill and Reid Personal styles [http://www.ehow.com/info\\_8556293\\_merrill-reid-social-styles.html](http://www.ehow.com/info_8556293_merrill-reid-social-styles.html)

## 6. Appendices

### Appendix 1

#### A practical example of the service improvement methodology undertaken by one of the hospitals participating in ACCORD

#### The Improvement Model

##### San Camillo Hospital, Rome, Italy

**Q1. What is the problem/issue you are addressing?** *(use the data from the patient questionnaire, process mapping and fishbone diagram to identify problems/issue slides 14 – 25 on the presentation)*

Rationale:

The mapping of the donation process in our hospital pointed out that the referral of the potential donor is currently managed through various channels:

- The intensivist working in the Accident and Emergency (A&D) Department that has the patient in charge
- The ICU intensivist
- An email account dedicated to Local Coordination Transplant, which contains the medical records of patients admitted at the A&D Department in the last 24 hours with the diagnosis of brain injury.
- Occasional referral by medical departments and the Stroke Unit

The diversified referral leads to a delay of the assessment of the potential donor by the Local Coordination for Organ and Tissue Procurement (CLT) having consequences on the efficiency of the entire donation process. In addition the potential donor is sometimes not even identified as such by the staff of the various departments.

**Q2. What are you trying to accomplish or hoping to improve?** *(what is the overall aim slides 30, 31 & 36 – 39 on the presentation)*

Guarantee the identification and referral of all patients with devastating brain injury admitted in the hospital, to the CLT that fulfil pre-defined standards for potential donation, in a constantly and timely manner within three hours after the event (or their admission in A&D).

We would like to increase the identification and referral of these patients to the CLT by hospital staff **with 100%**.

**Q3. Which section and question on the patient questionnaire does your problem/issue relate to?**

Q 8: Was the patient referred to the key Donation Person?

Rationale:

Of the 28 patients diagnosed with devastating brain injury only 15 (42%) were referred to the CLT

**Q4. Who have you spoken with to discuss how to address your problem/issue? (clinical colleagues etc)**

Nurses and Intensivist of the CLT Intensivist working in the ICU and A&D Department Medical Director of the A&D Department Head nurse and Medical Director of the A&D Department

**Q5. What changes are you going to make that will lead to an improvement? Please be as specific as possible**

The introduction of a minimum notification criteria for the identification and referral of patients with devastating brain injury (G.I.V.E.) presenting in A&D Department to the CLT denoted as Clinical Triggers:

- the introduction of a set of criteria for the identification of potential donor by the staff working in the A&D Department.
- The criteria will be employed to all patients admitted to the A&E Department with:
  - GCS <8
  - Intubated
  - Ventilated
  - Age : all patients
  - Where End of life care is considered

The Method:

- a. In case the defined clinical triggers are identified the Intensivist or Medical Team Leader of the A&D Department refers the patient to the CLT .
- b. Referral occurs after consulting the clinical trigger checklist by the staff (GIVE Poster), posted near the telephone in "the nurse station" of the A&E Department
- c. The poster notes the clinical triggers , who to contact , telephone number and the time trigger
- d. The referral of a potential donor by the staff of the A&D occurs within three hours from the admission of the patient in the A&D Department

- e. When referring to the CLT the staff should communicate the name and surname of the patient, the clinical triggers detected, the diagnosis and the name of the doctor who has the patient charge.

**Q6. What will be your measure of success? Please be as specific as possible** (*what can you measure that will demonstrate that your change is an improvement*)

- 1) All patients admitted in the A&D in the days when testing will take place with the final diagnosis of devastating brain injury are identified by staff and referred to the CLT.
- 2) All patients referred by the staff of A&D satisfied the criteria indicated by the clinical triggers.
- 3) The referral of patients to CLT occurred within three hours of their admission in the A&D
- 4) Feedback from the personnel using the GIVE tool

**Q7. How will you measure the effect of the implemented change?** (*slides 47 – 52 on the presentation*)

- 1) To measure the identification of all patients with brain injury admitted in the A&D: we will refer to the database of the A&D patients records (GIPSE) to check the number of patients admitted in the days of testing having that diagnose and compare them with the number of patients referred to the CLT (outcome measure)
- 2) To measure the "suitability" of the call: we will use the clinical triggers applied by the staff as a measure (process measure)
- 3) To measure the time trigger: we will value the arrival time of the patient in the A&E Department and the time of the call to the CLT. (process measure)
- 4) Written feedback concerning the use of the GIVE tool (qualitative measure)

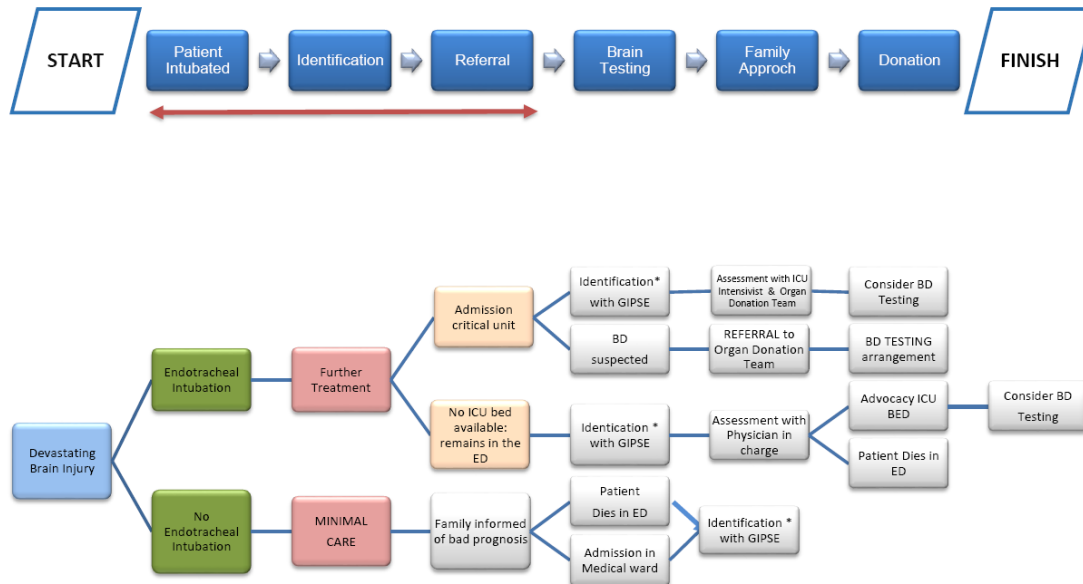
**Q8. Who will be involved in implementing the change and has this been discussed and agreed?** (*Key Donation Person, Critical Care or Emergency Department staff, senior medical or nursing staff*)

Key Donation Person (CLT) and Medical and Nursing staff of the A&D Department

**Q9. What timescales have you set to implement the change?**

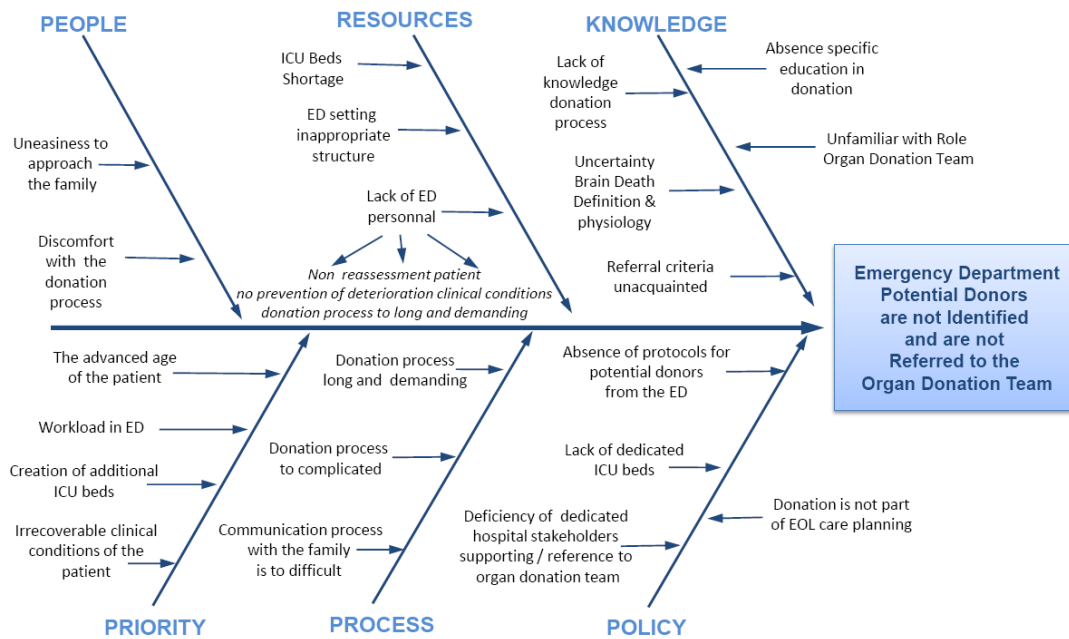
We would like to start testing from February 1<sup>o</sup> until April 30<sup>o</sup> 2014, we will perform an interim audit every 2 weeks.

**HIGH LEVEL PROCESS MAP OF DONOR  
IDENTIFICATION & REFERRAL IN THE ED  
San Camillo Hospital . Rome - Italy**



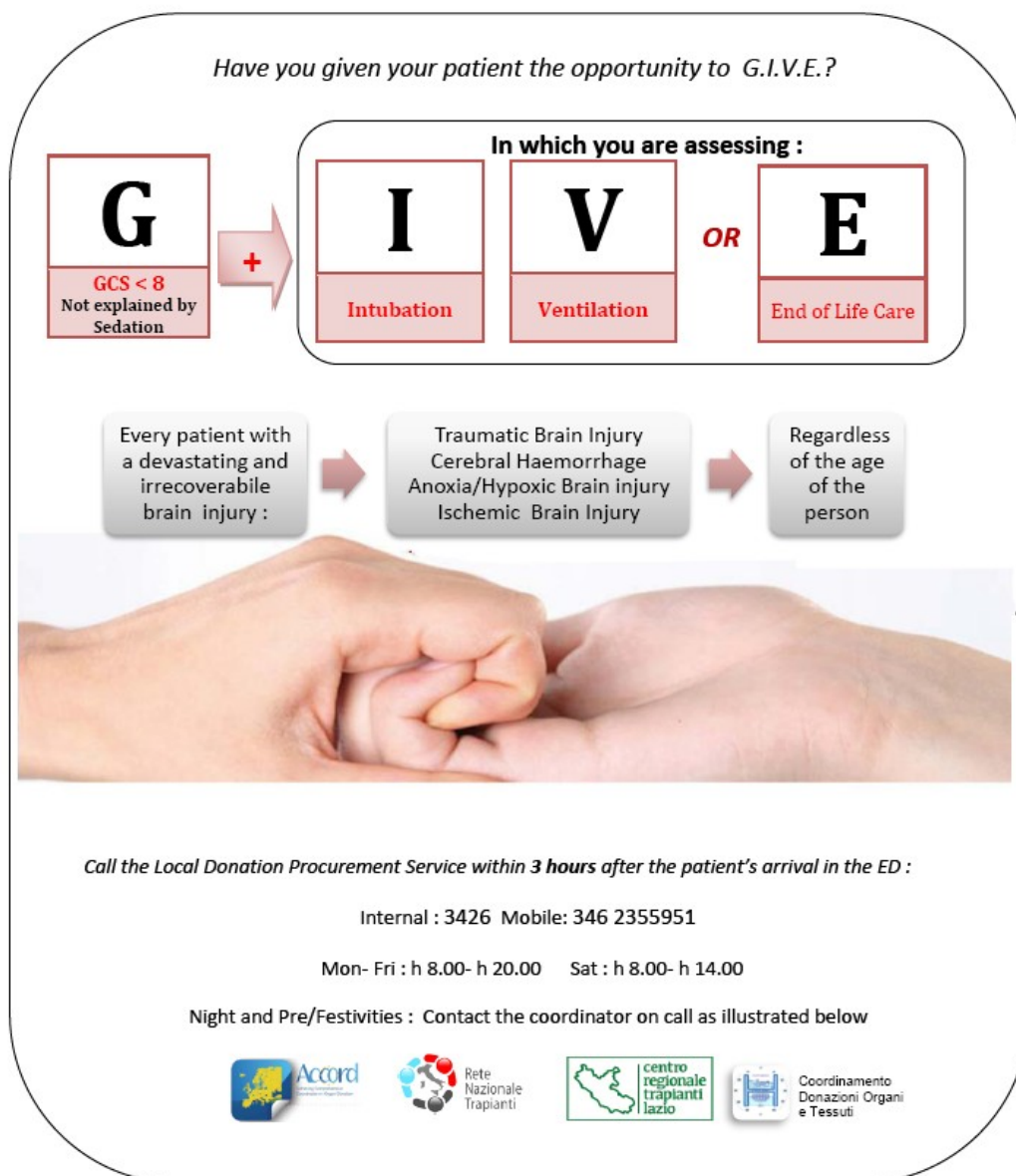
*\*The Potential Donor is identified by Organ Donation Team  
the day after admission in the hospital with the ED patient database (GIPSE).*

### POTENTIAL DONORS DIAGRAM San Camillo Hospital . Rome - Italy





## Minimum Notification Criteria for the identification and referral of patients with a devastating head injury





## PDSA Cycle Report

Name	Eartha Feller
E-mail address	eartha69@gmail.com
Country	Rome - Italy
Name of hospital	A.O. San Camillo - Forlanini

### 1. Could you provide a brief summary of your PDSA Plan.

PLAN	<b>The Change:</b>
	<b>What change are we testing?</b> To test the use of a minimum notification criteria (GIVE Poster <sup>AA</sup> ) that establishes clinical triggers to help identify and refer all potential donors in Accident & Emergency (A&E) Department to the CLT.
	<sup>AA</sup> : see Appendix A
	<b>On whom are we testing the change?</b> Clinical staff working in the A&E Department.
	<b>When are we testing?</b> February 1th 2014 - April 30th 2014
	<b>Where are we testing?</b> A&E Department Hospital: A.O. San Camillo - Forlanini – Rome, Italy
	<b>Predictions:</b>
	<b>What do we expect to happen?</b> The use of clinical triggers delivered by the GIVE Poster algorithm will result in a 100% referral rate from the A&E Department.
	<b>Details of the Data Collection Plan:</b>
	<b>Who will collect the data?</b> CLT staff
<b>What data do we need to collect?</b> <ul style="list-style-type: none"> <li>To measure the identification of all patients with brain injury admitted in the A&amp;E Department : we will refer to the database of the A&amp;E Department patients records (GIPSE) to check the number of patients admitted during the period of testing meeting the GIVE criteria and compare them with the number of patients referred to the CLT (<i>outcome measure</i>)</li> <li>To measure the "suitability"/appropriateness of the call: we will use the clinical triggers applied by the staff. (<i>process measure</i>)</li> <li>To measure the Time trigger: we will evaluate the difference between the arrival time (admission) of the patient in the A&amp;E Department and the time of the call to the CLT. (<i>process measure</i>)</li> <li>Written feedback by the A&amp;E staff concerning the use of the GIVE tool (<i>qualitative measure</i>)</li> </ul>	

#### How and Where will we collect data?

- Every time a CLT staff member receives a referral call, they will fill out the proper "PDSA Measurement Sheet" with the received information. The compiled sheets will be then collected in a dedicated file-holder for GIVE in the office of the CLT.
- Four members of the CLT will be committed to perform the review of the GIPSE database on a daily basis. The information obtained from GIPSE will then be displayed and summarized on a chart in Word.
- Subsequently the PDSA Measurement Sheets and GIPSE data will be assessed and transformed in excel and run charts.
- Written audit biweekly of the results.

## 2. Did you amend the original plan? If 'yes', state reason?

### YES:

- We did not implement nor collected any written feedback concerning the use of the GIVE tool (*qualitative measure*). We struggled to find validated instruments in literature to measure it. We choose to have only verbal feedback of the staff involved in the use of the GIVE tool.
- We converted the biweekly audit in monthly for organisational reasons

## 3. What was the problem you were addressing?

### *Problem addressed:*

The lack of a systematic identification and timely referral of potential donors by clinical staff working in the A&E department.

### *Rationale:*

- The mapping of the donation process in our hospital pointed out that the referral of the potential donor is currently managed through various channels.
- The diversified referral leads to a delay of the assessment of the potential donor by the Local Coordination for Organ and Tissue Procurement (CLT) having consequences on the efficiency of the entire donation process. In addition, the potential donor is sometimes not even identified as such by the staff .
- Data from the ACCORD study patient questionnaire indicated that of the 28 patients diagnosed with devastating brain injury only n=15 were referred to the CLT. Furthermore brain injury took place in the first 24 hours of admission in 75% (n=21) of the cases , while in 17.9% (n= 5) death was confirmed in the Emergency Department.

Q8. Was the patient referred to a Key Donation Person		
	N	%
No	3	16.7
Yes	15	83.3
Total	18	100.0

Days from admission to brain injury		
	N	%
0	21	75.0
1	1	3.6
2	4	14.3
3	-	-
4-6	-	-
7-9	1	3.6
10+	1	3.6
Total	28	100.0

Unit/Ward where death was confirmed		
	N	%
Adult Intensive Care	13	46.4
Specialised Neurosurgical Intensive Care	4	14.3
Emergency Department	5	17.9
Medical Ward	4	14.3
Stroke Unit	1	3.6
Other	1	3.6
Total	28	100.0

#### 4. Were you able to identify a root cause for the problem

Yes :

- Lack of training in organ donation
- Lack of a mindset to recognize the potential for donation

## 5. What interventions did you make to address the problem?

### The G.I.V.E. Poster

The introduction of a minimum notification criteria (G.I.V.E.) for the identification and referral of all patients with devastating brain injury admitted in the Accident & Emergency (A&E) Department to the CLT using clinical triggers. The clinical triggers employed in a systematic and sequential manner, regardless the age of the patient were :

1. Patient with a devastating brain injury
2. GCS <8
3. Intubated & Ventilated
4. Or where End of life care is considered

To address the timely referral of the potential donor (Time trigger) all patients were referred within 3 hours from their admission in A&E Department.

#### *The Method:*

1. Clinical staff of the A&E Department identified the patient with a devastating brain injury that could meet the GIVE criteria.
2. Referral to the CLT occurred after consulting the minimum notification criteria checklist by the staff (GIVE Poster<sup>1</sup>), posted near the telephone in "the nurse station" of the A&E Department.
3. The poster notes the clinical triggers, the time trigger, who to contact and telephone number.
4. The referral of a potential donor by the staff of the A&E occurs within three hours from the admission of the patient in the A&E Department.
5. When referring to the CLT the staff had to communicate the following information:
  - Name, surname and age of the patient
  - Time of the call
  - the clinical triggers detected
  - the medical diagnosis
  - the name of the doctor who had the patient charge
  - Time trigger within 3 hours is met ?
  - Any specific details / noteworthy

### Seeking Consensus

All stakeholders (members from A&E, ICU and the National & Regional Donation and Transplant Organisation) were invited to a consensus meeting about the PDSA cycle supported by a powerpoint presentation of the project.

<sup>1</sup> Representatives for ACCORD in Italy

Clinical staff of the A&E Department in addition received an email compounding the goals of ACCORD and GIVE, a description of the use of the GIVE Poster decision tree and an attachment of the poster, invoking their participation & cooperation.

## 6. What were your measures of success?

Improvement Measures	Outcome & Process measure	Current Performance	Goals
Ensure every Potential Donor in the A&E is identified and referred	Referral Rate	Unknown	100%
All patients referred satisfied the clinical triggers criteria.	Compliance to Clinical Triggers criteria: (Devastating Brain Injury, GCS<8, Intubation & Ventilation, or End of Life Care)	Unknown	100%
The referral of patients occurred within three hours from their admission in the A&E	Timely Referral	Unknown	Within 3 hours
Feedback from the staff using the GIVE tool	Written feedback concerning the use of the GIVE tool ( qualitative measure)	Was not preformed	

## 7. Dates PDSA cycle commenced and finished

Start date: February 1<sup>st</sup> 2014

Finish date: April 30<sup>th</sup> 2014

## 8. What did your data demonstrate after you implemented your change /intervention? (Please consult Figures attached in Appendix B)

Measure	Data before PDSA Cycle implemented	Outcome/Data after PDSA Cycle implemented
Number of Referrals from the A&E Department ( See Figure 1,2 & 3))	unknown	85.15% (Media) of patients referred from the A&E Department
Compliance to clinical trigger criteria (See Figure 4,5 & 6)	unknown	See for further details appendix B
Timely Referral within three hours ( See Figure 7)	unknown	83.33% of the patients was referred within three hours

**9. Did you see any impact as a result of your PDSA cycle?**

Yes: A change of attitude towards organ donation by intensivists

**10. Please describe the impact that you saw.**

Intensivists in the A&E department showed an increased awareness towards donation referral of patients with devastating brain injury. This result may be explained by the fact that intensivists are the only professionals that decide and perform endotracheal intubation in critical patients.

**11. What went well?**

- The Give tool is being used
- The POD referral increased
- 94.44 % of the referrals were made by Intensivists

**12. What didn't go well?**

*Problems encountered:*

- We had problems to engaged ED physicians and ED nurses in testing the change, resulting in only one referral by an ED physicians.
- Lack of Communication and motivation of staff and some stake holders
- In April we had a low admission rate of patients with devastating brain injury in the A&E department.

*Actions:*

- We set up a meeting in the latter end of February to refresh ED nurses teamleaders of each working shift about Accord and the GIVE tool to gain consensus/cooperation.
- Individual motivational encounters were held with ED personnel during working shifts.
- We started in April an education and training course in Organ and Tissue Donation for nurses and physicians working in critical care units, giving priority to ED staff to participate. The education program includes 5 courses for this year with a duration over a 3 year period.



**Major lessons learned from GIVE:**

- ED staff needs further education and training in Organ Donation to not only promote the donation culture but also to believe, as a healthcare professional, that Donation is part of End of Life care decisions.
- The definition devastating brain injury needs more objective and measurable criteria. Currently it is identified by the patients' clinical status, CT scan and specialist (neurosurgical /stroke /neurological) referral.
- Communication and motivation is an ongoing process that needs to be fostered constantly to gain consensus.

**13. What have you learnt through your participation in ACCORD?**

- The Improvement Model and PDSA methodology confirms to be a valid, systematic and simple instrument giving you the opportunity to build knowledge and learning about your own process and how to translate that learning into actions/changes.
- You need to measure if you want to implement changes in order to explain the impact of the change or improvement.
- To improve you need to understand your process and you need to know your own system
- Consider Benchmarking as a tool to wider your vision.
- Although Quality improvement in organ donation could depend on the vision and mission of hospital stakeholders, don't be afraid to approach them and continue to seek partners
- Share results: not only the positive ones, but also the adversities

**14. What are your next steps?**

Further research should be done to investigate how to gain consensus and cooperation from ED physicians and ED nurses regarding organ donation referral.

**15. Was there any other activity/initiatives underway in your hospital that might have impacted on the results from the PDSA cycle.**

- Change of key stakeholders in our hospital during testing
- Extreme overcrowding in the A&E Department during the PDSA testing and subsequent lack of resources.
- Lack of additional intensive care beds.

## Appendix 2

### English language service improvement resources

<a href="http://www.health.org.uk">http://www.health.org.uk</a>	The Health Foundation is an independent charity working to improve the quality of healthcare in the UK. They support people working in healthcare practice and policy to make lasting improvements to health services. The health foundation carries out research and in-depth policy analysis, run improvement programmes to put ideas into practice in the NHS, support and develop leaders and share evidence to encourage wider change.
<a href="http://www.scottishhealthcouncil.org/patient_public_participation/participation_toolkit/the_participation_toolkit.aspx">http://www.scottishhealthcouncil.org/patient_public_participation/participation_toolkit/the_participation_toolkit.aspx</a>	The Scottish Health Council was established by the Scottish Executive in April 2005 to promote Patient Focus and Public Involvement in the NHS in Scotland. The Participation Toolkit has been compiled to support NHS staff in delivering Patient Focus and Public Involvement. It offers a number of tried and tested tools along with some more recently developed approaches
<a href="http://www.ihl.org/Pages/default.aspx">http://www.ihl.org/Pages/default.aspx</a> <a href="http://www.ihl.org/resources/Pages/Tools/default.aspx">http://www.ihl.org/resources/Pages/Tools/default.aspx</a>	The Institute for Healthcare Improvement (IHI) is an independent not-for-profit organization helping to lead the improvement of health care throughout the world. Founded in 1991 and based in Cambridge, Massachusetts, USA, the IHI works to accelerate improvement by building the will for change, cultivating promising concepts for improving patient care, and helping health care systems put those ideas into action.
<a href="http://www.directedcreativity.com">http://www.directedcreativity.com</a>	Paul Plsek: author, consultant and pioneering concept developer, with expertise in creativity, innovation, leadership, complexity and large-scale change
<a href="http://www.institute.nhs.uk/building_capability/building_improvement_capability/improvement_leaders%27_guides%3a_introduction.html">http://www.institute.nhs.uk/building_capability/building_improvement_capability/improvement_leaders%27_guides%3a_introduction.html</a> <a href="http://www.institute.nhs.uk/option.com_quality_and_service_improvement_tools/Itemid,5015.html">http://www.institute.nhs.uk/option.com_quality_and_service_improvement_tools/Itemid,5015.html</a>	General Improvement tools and techniques from the NHS Institute for Innovation and Improvement advice, tools and techniques. For anyone who wants to improve their service in terms of patient safety, experience or outcomes..

**Note:** The website links in this document were live September 2014



### Appendix 3.

**Acknowledgements** The following clinicians and experts contributed to the development of this service improvement guide:

Professor Jean Penny	Improvement Expert	
Dr Paul Murphy	National Clinical Lead for Organ Donation	NHS Blood and Transplant
Mark Roberts	Business Lead, Work Package 5, ACCORD project	NHS Blood and Transplant
Claire Williment	Project Manager, Work Package 5, ACCORD project	NHS Blood and Transplant
Angela Himsworth	Critical Care Network Manager	Midlands Critical Care and Trauma Network
Liz Armstrong	Midlands Team Manager	NHS Blood and Transplant
Dr Sid Khan	Consultant in Intensive Care Medicine	Queen Elizabeth Hospital, Birmingham
Dr Rob Low	Clinical lead for organ donation and Consultant in Anaesthesia and Critical Care	Shrewsbury and Telford Hospital
Rebecca Timmins	Specialist nurse – Organ Donation	NHS Blood and Transplant
Shelagh Bickerton	Senior nurse, Critical Care	Royal Wolverhampton Hospital
Katie Fox	Specialist nurse – Organ Donation	NHS Blood and Transplant