1 Introduction

1.1 What Is Positive Deviance?

Generally speaking, the term 'deviance' can be used to refer to both:

- a behaviour or practice that deviates from the norm and may not be socially acceptable
- an individual or group that is an outlier in terms of their overall performance.

What we describe in this Element uses the second of these meanings. When we refer to positive deviance, we are describing an approach that involves identifying those who demonstrate exceptionally good performance on particular measures (the 'positive deviants') and then trying to understand what allows them to achieve this high level of performance. Their behaviours may differ from the norm, but more importantly they represent behaviours, practices, or systems that facilitate exceptional success.

1.2 The Origins of Positive Deviance and Its Underpinning Assumptions

The term 'positive deviance' was first used in the field of international public health in the 1960s. The approach was fuelled by a backlash against a perceived imperialist, professionalised view of public health interventions, and a move to recognise the knowledge and expertise that already exists within communities. For example, Wray, writing in 1972, describing mothers who were able to keep their children fed in the harshest conditions, proposed that:

> *Such mothers, it would appear, know more than we professionals do. They know how, in that incredible environment, to provide their children with basically adequate diets and to protect them from too frequent infections. Perhaps they can teach us. At the very least, we ought to search out the successful mothers in such circumstances, examine their child care practices, and try to identify what it is they are doing that makes the difference in their children. If we cannot teach these things to other mothers in that environment, perhaps they can.*[1]

The approach is perhaps even more clearly articulated in one of the earliest papers to refer to positive deviance as an alternative approach to studying and improving public health:

> *[T]o identify those families in which a child between age six months and five years falls in the upper 25 per cent in height and weight measurements. These families are labelled as being 'Positive Deviants' from the undernutrition that prevails in the population. They are then studied anthropologically to uncover any practices related to food sources, storage, preparation, consumption, and*

> *content. The information would be used in designing food supplementation or other nutritional promotion in the population at large on the assumption that the observed 'favourable' practices, although atypical, are feasible and culturally acceptable because they are indigenously rather than extraneously derived.*[2]

Most famously, positive deviance was used in the 1990s to improve the nutritional status of children in Vietnam.[3] In this case, an international charity, Save the Children, identified several positively deviant behaviours, including the unusual practice of feeding shrimps from the paddy fields to small children, and other more accepted behaviours, such as hygienic food preparation.[4,5] Through an education programme to help others adopt these practices and behaviours, the organisation saw a 74% reduction in severe malnutrition among children under three years of age. This impact was sustained many years after Save the Children left the communities.[6] Following this, the approach was scaled up to address childhood malnutrition locally and internationally, through a community-based nutrition rehabilitation model combining the positive deviance approach and 'hearth' education sessions.[3] The hearth approach gathers communities around fireplaces or kitchen hearths for education and rehabilitation and to promote the wider adoption of positively deviant behaviours.[7,8] Since then, positive deviance has been used to address various public health issues such as pregnancy outcomes,[9] the care of newborn children,[10] weight control,[11] and female genital mutilation.[12]

Although positive deviance can take different forms, its use in international public health is built on some underpinning assumptions:

- that positive deviants succeed despite facing similar constraints as others
- that solutions to common problems:
  - already exist within communities (in healthcare, these communities are teams, groups, departments, and organisations)
  - can be identified or uncovered by anthropological methods
  - are acceptable, feasible, and sustainable within existing resources because they are already practised by people within the community
- that these features increase the likelihood that the solutions are generalisable to, and can be adopted by, other communities.

1.3 Applying Positive Deviance to Healthcare Improvement

Use of the term 'positive deviance' has increased substantially in recent years, and many different definitions and applications have now emerged.[13] Since the early 2000s, it has expanded into healthcare and has been implemented in diverse ways. Two key frameworks are often used to help operationalise the

positive deviance approach: the 4Ds framework and the Bradley et al. framework. These frameworks are explored in more detail next, although it is important to note that some studies offer only poor descriptions of how positive deviance has been implemented in healthcare.[14]

The 4Ds framework (see Figure 1), or variations of it, is most closely aligned to the approach's origins in international public health. It centres around four steps:

- **defining** the problem
- **determining** the presence of positive deviants
- **discovering** the uncommon but successful strategies
- **designing** interventions to allow others to practise these strategies or behaviours.

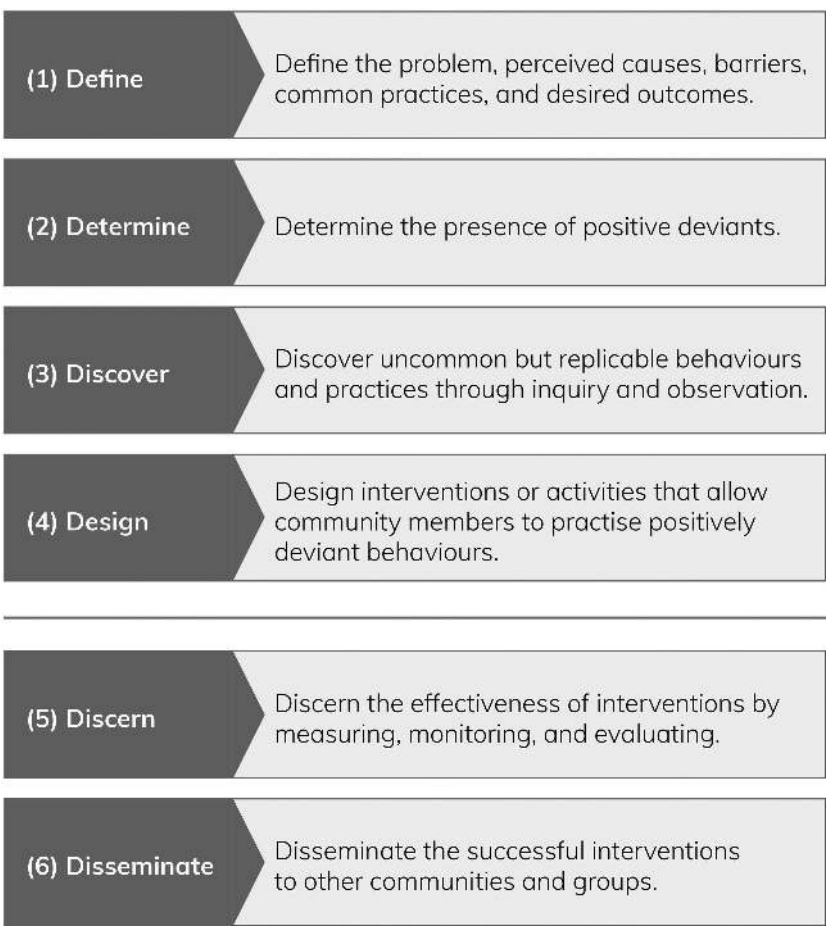

Figure 1 The 4Ds/6Ds framework for implementing the positive deviance approach
Adapted from the Positive Deviance Initiative[15] *and Singhal and Dura*.[16]

Variations of this framework include a fifth[15] and sometimes sixth step,[16] which typically focus on monitoring and evaluating the effectiveness of solutions to support wider dissemination (Figure 1). This framework and its variations have been used across a range of studies, for example to reduce MRSA infections,[16] help smoking cessation among prisoners,[17] and to improve how medical students acquire clinical skills.[18]

Box 1, highlighting research by Bradley et al.,[19] describes one of the most well-known examples of a positive deviance study in healthcare. It led to the development of another four-stage framework (Figure 2) designed to support the positive deviance approach in healthcare organisations specifically. Bradley et al. recommend identifying positive deviants using concrete, routinely collected, and widely endorsed data (stage 1). Qualitative methods should then be used to generate hypotheses about the positively deviant strategies used to succeed (stage 2). These hypotheses can be tested in larger, more representative samples (stage 3), and the newly characterised best practice disseminated to others with the help of key stakeholders (stage 4).

Box 1 Improving door-to-balloon times for patients with acute myocardial infarction in the USA[19–21]

The Problem

Prompt treatment is critical for the survival of patients with acute myocardial infarction. During 2004–05, a national guideline stated that the door-to-balloon time – the time from the patient arriving in hospital to a stent being inserted to reopen their blocked artery – should be within 90 minutes.[22,23] Yet less than 50% of patients received care that met this target. Door-to-balloon performance had remained static for several years, even though other key cardiac care indicators had improved and some hospitals were managing to meet the target.

How Was Positive Deviance Used?

A team of academics, clinical academics, and clinicians used national registry data to identify 35 US hospitals that achieved median door-to-balloon times of 90 minutes or less for their past 50 cases. These 35 hospitals were ranked according to improvements in this measure over the previous four years, and 11 positively deviant hospitals that demonstrated the greatest improvement were sampled. Researchers used in-depth visits (tours and open-ended interviews) at these 11 sites to explore multidisciplinary staff members' perspectives and experiences of

improving door-to-balloon times. From their qualitative analysis, the team identified contextual factors (e.g. senior management support, shared goals, physician leaders, and interdisciplinary teams) and specific clinical strategies (e.g. activation of the catheterisation laboratory by emergency medicine physicians instead of cardiologists) that they thought were related to top performance in the positively deviant hospitals.[21]

These qualitative findings were then used to develop a web-based survey, which 365 US hospitals completed. For each hospital, survey data were combined with data on door-to-balloon times, and regression modelling was used to identify six specific clinical strategies that predicted lower door-to-balloon times:[20]

- activation of the catheterisation laboratory by emergency medicine physicians instead of cardiologists
- using a single call to activate the catheterisation team
- activating the catheterisation team while the patient was still en route to hospital
- expecting staff to arrive in the catheterisation laboratory within 20 minutes of being paged
- always having an attending cardiologist on site
- having real-time feedback for staff on door-to-balloon times.

The American College of Cardiology disseminated these findings to other US hospitals via the Door-to-Balloon Alliance – a public campaign supported by 38 professional associations and agencies. Around 70% of hospitals treating acute myocardial infarction signed up to the alliance and, by 2008, the number of patients receiving treatment within 90 minutes had increased by 25%.[19]

The Bradley et al. framework is more data-driven than the 4Ds/6Ds framework, which rarely tests associations between the behaviours and practices identified and the outcomes of interest. It is also more often used at an organisational, regional, or national level (e.g. see studies by Bradley et al., Gabbay et al., and Klaiman et al.[24–28]). Perhaps as a function of this, the framework appears to be predominantly implemented from the top-down, marking a recognisable shift from the original bottom-up applications, where members of the community were integral to all stages of the approach.

Beyond these two frameworks, applications of positive deviance can also broadly be considered to sit on a continuum ranging from those that are

'community driven' to those that are 'externally led'. Positive deviance studies at the community-driven end of the continuum tend to share similarities with those conducted in international public health. Members of the community (i.e. healthcare staff) are typically heavily involved in leading the studies and are central to identifying and creating their own solutions. These studies tend to involve more participatory methods (e.g. discovery and action dialogues or improvisational theatre – see stage 2 of the positive deviance approach in Section 2.2). Though quantitative data can be used, less emphasis is placed on statistically identifying positive deviants and assessing the extent to which their behaviours improve outcomes. Box 2 describes a rigorously conducted community-driven controlled trial in which healthcare staff were integral to identifying positive deviants and how they succeed.[31]

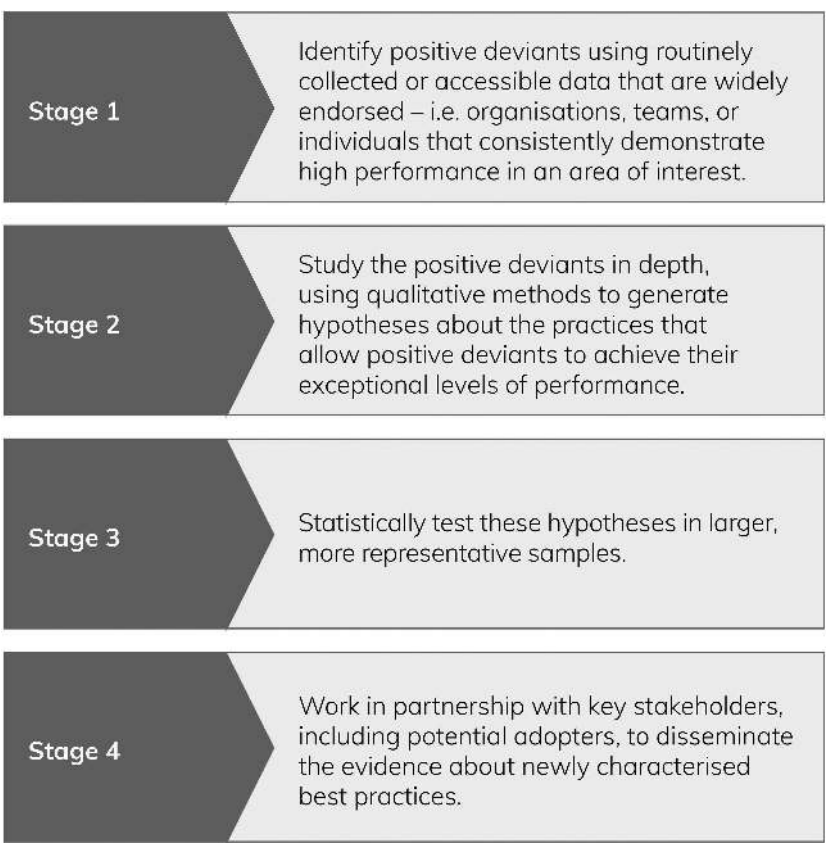

Figure 2 Bradley et al.'s four stages to implementing the positive deviance approach in healthcare organisations

Adapted from Bradley et al.,[19] *in accordance with the terms of the Creative Commons licence (http://creativecommons.org/licenses/by/2.0).*

Box 2 Using the positive deviance approach to address healthcare-associated infections

The Problem

Healthcare-associated infections such as Methicillin-resistant *Staphylococcus aureus* (MRSA) are a common cause of ventilator-associated pneumonia, bloodstream infections, and surgical site infections. These infections result in protracted hospital stays and treatment, costing US hospital inpatient services up to $45 billion a year (as estimated in 2007).[29,30] Good hand hygiene effectively prevents healthcare-associated infections, yet behavioural interventions are rarely successful[31] and compliance rates remain relatively low, at around 50%.[29]

How Was Positive Deviance Used?

Marra et al. conducted a controlled trial to improve hand hygiene compliance in two comparable step-down units.[31] After a period of baseline data collection, positive deviance was implemented in one unit, while the other acted as a control. In the intervention unit, nurse managers initially identified positively deviant staff who displayed good hand hygiene compliance. Additional positive deviants were then identified over time. The approach was implemented via twice monthly meetings involving staff who worked across a variety of shifts. Meetings provided opportunities to discuss feelings about hand hygiene, what needed to improve, and examples of good practice. Staff created videos, shared healthcare-associated infection rates, and decided to assess individual performances across shifts to create comparison and competition within the team.

After implementing the positive deviance approach, there was a statistically significant, nearly twofold increase in hand hygiene episodes and a significantly lower infection rate between the intervention and control units.[31] The success of the interventions led to the extension of positive deviance to the control unit after three months of the trial. Throughout, hand hygiene compliance was evaluated using electronic handwashing counters and the incidence of healthcare-associated infections was monitored.

Following this, an observational study explored the sustainability of the positive deviance intervention.[32] For an additional year, staff continued to implement positive deviance on both units and to measure healthcare-associated infections and hand hygiene compliance. Amid concerns that the twice-monthly meetings would become tedious, staff employed motivational techniques (e.g. the parallel thinking process Six Thinking Hats), held

interactive sessions to discuss controversial infection control issues, and retained competition among team members. Compared with baseline, each of the two units observed at least a twofold increase in hand hygiene episodes, as well as a significant reduction in the incidence of healthcare-associated infections, suggesting that the improvements gained were sustainable.[32]

By contrast, at the other end of the continuum, externally led applications tend to be much more concerned with accurately identifying positive deviants using quantitative data. This means that these studies are often conducted by outsider experts (e.g. academics, clinical academics, or clinical/national leads), with perhaps less community or frontline participation. These externally led applications may also use rigorous research methods, such as interviews or observations, to understand what is contributing to positive deviance. Broadly, community-driven applications tend to steer more towards applying the 4Ds framework, while externally led applications favour the Bradley et al. framework. However, it is important to note that this is not a dichotomy. Some externally led applications have extensive clinical stakeholder involvement, while some community-driven applications are conducted rigorously and published in peer-reviewed journals.

1.4 What the Approach Is (and What It Is Not)

Traditionally, healthcare has taken a deficit-based, find-and-fix approach to safety management, using methods such as incident reporting and root cause analysis, and producing guidelines and procedures to eliminate the risks identified.[33] This approach to managing safety, now commonly referred to as Safety I, seeks to identify the causes of error and harm to eliminate or contain them. The effectiveness of Safety I has been questioned in recent years,[33,34] resulting in the emergence of the so-called Safety II approach to managing safety.[35,36] Rather than focusing on error and harm, Safety II seeks to understand everyday performance to ensure that as much as possible goes right – that safe care is delivered as frequently as possible under both expected and unexpected conditions.[35] Furthermore, asset-based approaches, such as Learning from Excellence[37] and appreciative inquiry,[38] are increasingly used to improve both the quality and safety of care. Safety II and asset-based approaches share elements in common with positive deviance: they focus on identifying and learning from what goes right rather than being dominated by what has gone wrong and, broadly speaking, they seek to understand ‘work as done’ rather than ‘work as imagined’.

The positive deviance approach is distinctive, however (Table 1). For example, Safety II seeks to generate learning from everyday performance,

Table 1 Key differences between Safety I, Safety II, and the positive dev

	Safety I	**Safety II**
Underpinning premise	To ensure that as few things as possible go wrong. Focus on negative outliers.	To ensure that as many things as possible go right. Focus on everyday performance.
Safety management principle	Reactive – respond when something happens or risk is deemed unacceptable.	Proactive – continually try to anticipate developments and events.
View of human factors	Humans are predominantly seen as a liability or hazard. They are a problem to be fixed.	Humans are seen as a resource for system flexibility and resilience. They provide flexible solutions to potential problems.
Investigations	Accidents are caused by failures and malfunctions. The purpose of an investigation is to identify the causes.	Things go wrong for the same reasons that they go right. The purpose of an investigation is to understand how care usually goes right, as a basis for explaining how care occasionally goes wrong.

Adapted from Hollnagel et al.[35]

rather than focusing on extreme performance outliers.[35,36] Acknowledging the complexity of healthcare, Safety II assumes that good and bad outcomes occur in the same way and that safe care is created by people constantly adapting and adjusting to the variable conditions and situations that they face.[35,36] By contrast, positive deviance takes a more linear approach assuming that it is possible to identify and then spread the causes of exceptional performance – the behaviours or processes that reliably lead to exceptional outcomes. Although positive deviance shifts our gaze to the opposite end of the performance spectrum, it could, in essence, be considered akin to a Safety I approach, albeit one that focuses on finding and fixing (i.e. spreading) the causes of sustained positive performances rather than one-off negative incidents or events.

Similar distinctions can be drawn between positive deviance and approaches such as Learning from Excellence and appreciative inquiry. Learning from Excellence aims to improve quality of care and staff morale through peer-reported episodes of success, which are shared and, in some instances, discussed or analysed in more depth to generate learning.[39] Despite its name, Learning from Excellence typically focuses on discrete episodes of *everyday* success that arise through workarounds, improvisations, and the generosity of staff.[40] By contrast, positive deviance focuses on exceptional performance outliers who typically sustain exceptional performance over time.

Appreciative inquiry is a participatory approach that generates organisational change by reframing problems, building on positive ideas, and fostering learning.[38,41] Although appreciative inquiry is used in some applications of positive deviance to uncover success (particularly those that are community-driven or conducted in international public health), it does not specifically seek to learn from those who demonstrate exceptional performance.[42]

2 The Positive Deviance Approach in Action

Positive deviance has been applied to healthcare improvement at different levels of the system and to address a variety of different problems. This section is structured around Bradley et al.'s framework, as it is thus far the only one that has been designed specifically for healthcare settings.[19] We present cases that exemplify each stage, while also drawing on examples of community-driven applications. Cases are used to highlight some of the challenges and the opportunities of using the positive deviance approach.